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TRACER EVALUATION MANUAL

A METHOD FOR ASSESSING ADEQUACY OF AMBULATORY MEDICAL CARE

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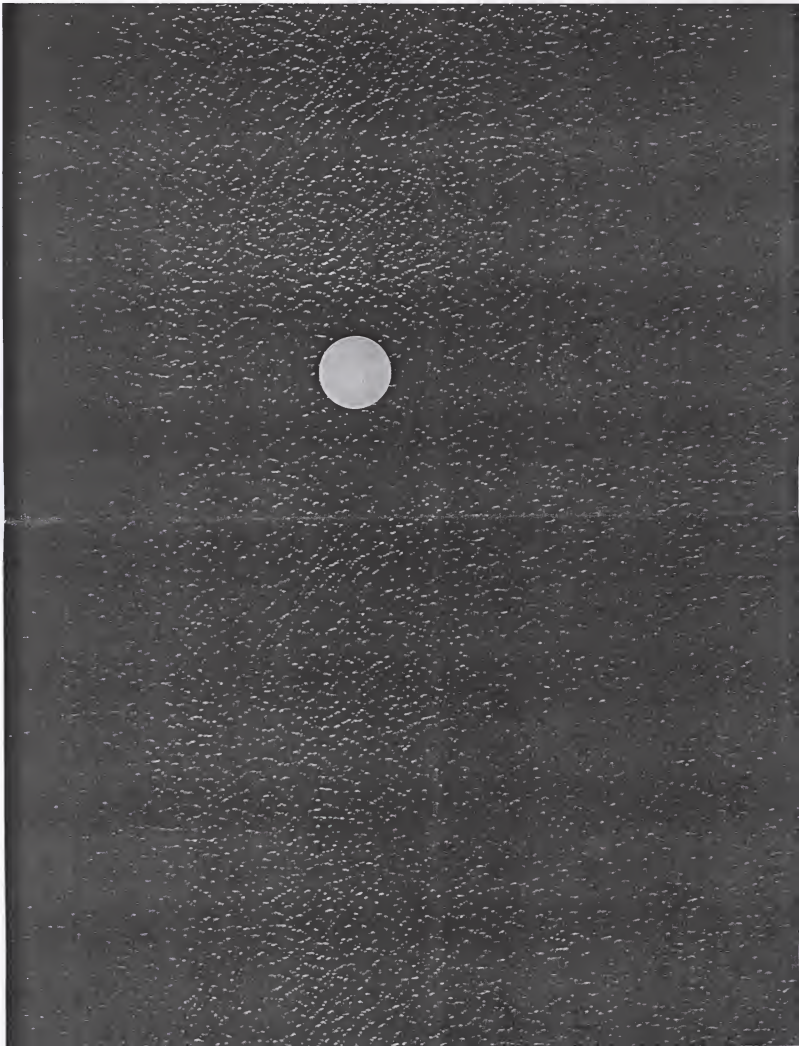

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FOREWORD

The TRACER EVALUATION MANUAL presents instructions for using the tracer method for evaluating ambulatory medical care. The content of the manual is based on procedures and materials developed for the project "Tracer Evaluation of Diagnosis and Treatment of EPSDT Referrals." The project was sponsored by the Social and Rehabilitation Service of the Department of Health, Education, and Welfare, Grant #11-P-57761/5-01, and was conducted in the Program in Maternal and Child Health, School of Public Health, The University of Michigan in cooperation with the Michigan Department of Social Services and the Michigan Department of Public Health.

Members of The University of Michigan who participated in the project besides the authors were O. Lynn Deniston, Professor, Department of Health Planning and Administration, George W. Williams, Associate Professor, Department of Biostatistics, both of the School of Public Health, and Beverly J. Lingle, former Principal Investigator, EPSDT Project.

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INTRODUCTION

ABOUT THE MANUAL. . .

This manual contains instructions for evaluating medical care provided to children. The evaluation procedure described in this manual is called the *tracer method* because it concentrates on a limited number of medical conditions (known as tracers) and permits generalization of those results to larger classes of conditions. The tracer method consists of several component processes, all of which the evaluator must complete to implement this method. The manual is designed for use by persons familiar with medical care processes, but not necessarily medical care practitioners.

The manual is organized around the tasks necessary to implement the tracer method. Each of the components of the method is presented as a separate activity, containing step-by-step instructions for its use. The advantages and disadvantages of making decisions among alternatives, rationales and probable outcomes are discussed. While components (or parts of them) are presented in a linear sequence in the manual, in reality more than one step may be implemented simultaneously.

Information pertinent to evaluating eight tracer conditions is presented and discussed. For each of the eight conditions, reference materials, forms and standards of care are included. However, materials for only one condition are used for illustration throughout the instructions. Similar materials for the other seven conditions are contained in Part Three.

ABOUT THE METHOD. . .

Medical care may be defined in very broad or narrow terms. Some definitions of health care refer to any or all of those processes which have <u>maintenance</u> of health as their goal,

including health education, preventive services, diagnostic tests, medical treatment, and follow-up and monitoring services. Alternatively, medical care is often defined as those diagnostic and treatment activities used by medical practitoners to alleviate signs and symptoms of abnormal or disease conditions. It is this latter definition of medical care which we mean when we discuss evaluation of medical care.

Evaluation of medical care may also be defined in very broad or narrow terms. Evaluation may encompass issues of quality of care, relationship of process of care to outcome, and ratio of costs to quality of care. In this manual, *evaluation of medical care* refers to 1) the adequacy of care, measured against explicit performance standards, and 2) the impact of care, measured against explicit expected outcomes.

This method is an adaptation of the tracer method developed by David Kesser.* The procedures, standards, and materials presented in this manual were developed by members of an evaluation team at The University of Michigan School of Public Health and applied to an evaluation of medical care provided to children screened and referred in the Michigan Early and Periodic Screening, Diagnosis and Treatment Program.**

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*See David M. Kessner and Carolyn Kalk. A Strategy for Evaluating Health Services. Institute of Medicine. National Academy of Sciences, Washington, D.C., 1973.

**For a detailed summary of this evaluation effort, and an analysis of the results, see "Tracer Evaluation of Diagnosis and Treatment Provided to EPSDT Referrals, Final Report"; SRS Grant #11-P-57761/5-01, December, 1976.

WHAT SETTINGS ARE APPROPRIATE FOR THE TRACER METHOD?

The tracer method for evaluation of medical care was developed for use in health care settings which have the following characteristics:

1. *The setting provides care to a general population of children.* This excludes certain special service pediatric clinics with limited functions, such as well-baby clinics, psychiatric clinics, specialty clinics such as pediatric cardiology, nephrology, etc.
2. *The setting provides ambulatory medical services.* The setting may also provide or arrange for inpatient services. The method is not designed only for evaluation of hospital care.

The tracer method and this manual are designed for use in settings where ambulatory medical care services are provided to a general pediatric population. This includes pediatric outpatient departments of hospitals, general pediatric clinics such as those found in large multi-specialty group practices and HMO's, public clinics such as health department clinics and Children and Youth clinics, and in private pediatric practices.

Since the method uses a number of specific medical conditions as tracers to assess the adequacy and impact of care provided to a large variety of medical conditions, it is not an efficient tool for assessing care provided to one type of condition (e.g. care delivered in a specialty clinic, or to a special population of patients). Similarly, a setting which provides primarily preventive or maintenance services (not diagnosis and treatment), as in a well-baby clinic, would also be inappropriate for use of the tracer method.

WHO SHOULD CONDUCT THE EVALUATION?

The method contained in this manual is designed to be conducted by persons familiar with medical care processes, but who are not necessarily medical practitioners. The familiarity with medical care processes needed to implement the method could be quickly acquired by someone who has never worked in a medical care clinic. The step-by-step instructions may be most readily understood and applied by persons familiar with the techniques of survey research, but every attempt has been made to describe the methodological steps as simply and clearly as possible. In some instances, expertise in research methods and statistics is required. Where this is applicable, reference has been made to source materials which describe these techniques.

NOTE: This method may be applied by non-expert evaluators <u>only</u> because the procedures, standards and forms have already been developed and are included for use with the manual. The evaluation techniques on which the tracer method relies require professional expertise for design and development. The members of the research team which developed the method and this manual include physicians, biostatisticians, survey researchers, and computer experts. Part Four contains detailed descriptions of the process used to develop materials contained in this manual; it is not recommended that persons without professional expertise attempt to replicate this method using different tracer conditions, nor make major changes in the methods presented without consulting persons with medical and research training.

Part One

THE TRACER EVALUATION METHOD

A Summary of the Tracer Method

Limitations and Assumptions

Questions Which May Be Answered

Part One
The Tracer Evaluation Method

A SUMMARY OF THE TRACER METHOD

The principal objective of the tracer method is the assessment of adequacy of medical care provided by medical practitioners for specific medical conditions. This assessment includes measuring practitioner performance against explicit predetermined criteria; and measuring the impact of medical care on the health status of the patient.

The fundamental activies required to implement this method are 1) the development of standards of care against which actual care delivered is compared as a measure of adequacy and appropriateness; 2) the specification of expected outcomes of care against which actual outcomes of care are compared as a measure of impact.

Because it is difficult and usually inefficient to establish standards and expected outcomes for all medical conditions, a limited number of specific conditions are selected (tracers)to represent larger classes of conditions. Standards are developed and information collected for only these conditions, and the findings are generalized to other similar conditions.

The steps which are necessary to implement the tracer method require that specific decisions be made and tasks carried out. These are described in detail in the instructions (Part Two), but are outlined below to provide the reader with a picture of the overall design of the method.

ACTIVITIES

1 **DESCRIBE THE SETTING**

Describe the organizational characteristics of the care setting and general demographic characteristics of the patient population which will be evaluated. This may be all of the pediatric patients in a given delivery setting, patients in several settings, or some subset of these.

2 **SELECT AMONG TRACER CONDITIONS**

A small number of representative medical conditions must be chosen for study. Eight candidates (tracers) are contained in this manual, and criteria for selection among them are presented.

3 **IDENTIFY THE STUDY POPULATION AND CHOOSE SAMPLE**

Those members of the patient population must be identified who have or have had one or more tracer condition(s). It is this group's medical care that will be evaluated. It will also be necessary to limit the period of time over which you are going to examine care for a tracer condition. In this way care provided by different providers over time may be evaluated for one or more episodes of illness.

4 **REVIEW MINIMAL CARE PLANS**

The standards for adequacy of care must be reviewed. Actual care delivered is compared to these standards. Standards have already been developed for the tracers contained in this manual. Explanations of how they were developed are presented in Part Four.

5 **COLLECT DATA**

Medical records are examined to determine what services were provided to patients. Record reviews and patient interviews are conducted and analyzed to determine outcomes of care. Sample forms and definitions for eight tracer conditions are included in this manual, with detailed instructions for their use.

6 **ANALYZE DATA & REPORT RESULTS**

The findings from data collection must be tabulated and analyzed using standard statistical techniques, and the results interpreted for use by administrators and planners for program design and revision. Instructions for analysis and interpretation, and for packaging results are contained in the manual.

ASSUMPTIONS AND LIMITATIONS OF THE METHOD

The tracer method is based on three methodological assumptions. These are: 1) a retrospective audit of medical records will yield sufficient information about medical services actually delivered; 2) consensus by generalist and specialist providers on minimally acceptable criteria for medical management will yield appropriate standards of care; and 3) findings on adequacy of care for one condition can be generalized to a class of similar conditions. The appropriateness of the tracer method for medical care evaluation relies on acceptance of these assumptions, as does the validity of the results.*

QUESTIONS WHICH MAY BE ADDRESSED USING THE TRACER METHOD

The tracer method as presented in this manual is designed to evaluate the adequacy and impact of medical services in an ambulatory care setting. Application of the method can provide information about the quality of medical services with respect to provider and patient characteristics, and about characteristics of the setting in which care is delivered. The tracer method is <u>not</u> intended to address organizational questions such as operating efficiency, expenditure levels, or utilization patterns.

Some questions which the user may attempt to answer are:

1. What is the <u>overall level of adequacy</u> of medical services provided in your care setting?
2. Is there a relationship between <u>adequacy</u> of care provided and <u>impact</u> (outcomes) of care?
3. Is there a relationship between <u>adequacy</u> of care provided and <u>characteristics of providers</u> such as education, age, familiarity with patient, mode of practice, etc.?

*These assumptions are theoretical assumptions that have not been proven. Therefore, acceptance of the assumptions only means that the evaluator believes that there is a high probability that they are valid.

4. Is there a relationship between adequacy of care provided and characteristics of the patient, such as age, ethnicity socio-economic status, familiarity with provider, etc.?

In order to formulate specific hypotheses, these questions need to be divided into their component parts. The types of variables which should be considered are determined by the characteristics of the care setting which is under study. The question of hypotheses will be pursued in greater detail in Part Two.

Part Two

IMPLEMENTING THE TRACER METHOD IN A CARE SETTING

Activities

1. Describe the setting
2. Select tracer conditions
3. Identify study population and choose sample
4. Review minimal care plans
5. Collect data
6. Analyze data and report results

ACTIVITY 1 DESCRIBE THE SETTING

The setting in which the evaluation is conducted dictates the procedures and materials to be used. Furthermore, certain characteristics of the setting dictate the types of questions the evaluator will be seeking to answer. It is therefore important to clearly describe the setting in which the care that is to be evaluated is delivered.

STEP 1: Describe the Setting

The description should include details of the institutional characteristics of the setting. For example, is it a solo or partnership pediatric practice, a multi-specialty group practice, a private or public comprehensive care clinic? Is the setting located in a rural or urban environment?

STEP 2: Describe the Population

Characteristics of the patient population should also be described. This includes age distribution, family income levels, health care utilization patterns, the average time patients have been members of the patient population, source of payment, etc.

STEP 3: Specify the Objectives

An initial step in any evaluation requires specifying the objectives of the evaluation. In addition, the terms used in statements of objectives must be clearly defined. These objectives will guide the evaluator through the evaluation process.

The overall objective in applying the tracer method is to evaluate or assess the adequacy and impact of medical services delivered to a specified population of patients. Within this objective, several sub-objectives must be specified, which are relevant to the characteristics of the setting under study. For example, the user may want to measure the relationship between

adequacy of care and specific characteristics of the setting and/or patients. Or, the user may want to measure adequacy of certain medical care processes, such as follow-up in relationship to outcomes of care. Questions in which the evaluation is interested must be carefully considered and put in writing as the first step in the project. Only if the questions of interest are thoroughly considered can appropriate data be collected to answer the questions.

STEP 4: Formulate Hypotheses

The best way for the evaluator to specify questions of interest (objectives of the evaluation) is to express them in terms of hypotheses. They help identify measurements and characteristics (variables) which can be further defined. The hypotheses are expressions of the relationships that the evaluator expects to exist or not to exist. For example, you may intuitively feel that adequacy of care will vary with variation in educational level of the provider. A hypothesis that expresses this belief should be worded: "There is a relationship between adequacy of care and the educational level of the provider." Or, it may be worded in what is known as the "null" (or negative) form of the hypothesis, which is: "There is no relationship between adequacy of care and the educational level of the provider." The null form of the hypothesis is usually the preferred form, and then it is the evaluator's job to accept or reject the null hypothesis. If it is rejected, then the relationship expressed by the hypothesis may be inferred.

STEP 5: Define Terms

While selecting questions of interest and formulating them into hypotheses, the evaluator must also clearly define characteristics (variables) which make up the hypotheses. For example, expressions such as "educational level" might be defined in terms

of number of years of post-medical school training, or number of years of post-medical school training in a given specialty. These are known as *operational definitions*, since they define the conceptual characteristic in operational or measurable terms.

These operational definitions are governed by two factors. The first is that they must be characteristics that are actually measurable. For example, it might be desirable to define educational level in terms of the amount of knowledge that a student actually absorbed while under training. But this is very difficult to measure, so the number of years of training is used instead. In this sense, number of years of training is actually serving as a proxy measure for an amount of knowledge the provider can command.

The second factor which will govern selection of operational definitions is the characteristics of your setting. These will determine the detail of an operational definition. Using the example above, educational level could be defined as number of years of training in each of several sub-specialties. However, if the majority of providers in your setting are trained in only one specialty, such as general pediatrics, it would not be useful to define educational level in these terms.

There are actually two kinds of variables (or component parts) which an evaluator must consider. The ones discussed above--characteristics of providers and patients--are independent variables. Adequacy and impact of care on the other hand are dependent variables, because they are presumed to be affected by the independent variables and to vary accordingly. For this reason, they are defined in terms which are in agreement with the theoretical methods and assumptions of the tracer method. Because

the dependent variables go hand-in-hand with the particular method of evaluation, the definitions for assessing adequacy and impact of care (using the tracer method), are defined as follows:

"adequacy" - A discrete quantitative measure of quality of health care. Adequate or inadequate, and degree of adequacy will be measured by the degree to which care has met the specified standards of the minimal care criteria.

"impact" - A measure of the degree to which movement has been made toward specific goals. The impact of care will be measured by the degree of movement toward tracer-specific treatment goals (outcomes) as specified in the minimal care plans.

During the data analysis phase, the evaluator uses these and all other operational definitions to aggregate and measure performance and interview data, to test the original hypotheses. In addition, when preparing the results of the evaluation, the evaluator must include definitions of terms so readers may know the bases on which evaluation statements are made.

The various characteristics (independent variables) the user may consider measuring with respect to adequacy and impact of care are completely governed by the nature of the setting being evaluated, and the questions which are most important to those using the results of the evaluation.

The variables used in the Michigan EPSDT Evaluation Project may or may not be of interest or importance in your setting. However, a summary of the variables used by the authors, is provided below to clarify and to guide your thinking. Characteristics

which are relevant to your setting may be added, and those characteristics which are irrelevant to your setting may be deleted.

Characteristics of Providers and Settings

1. Access by all providers to complete patient record
2. Previous contact between provider and patient or patient's family
3. Geographic characteristics of setting--rural or urban; access to specialty care
4. Number of different providers involved in one episode of care
5. Type of care setting--solo practice, group practice, comprehensive clinic, HMO, etc.
6. Medical school education of provider--graduate of American or foreign medical school
7. Age of provider, and year of graduation from medical school

Characteristics of Patients

1. Ethnicity of patient
2. Socio-economic status of patient
3. Degree to which patient complied with medical treatment regimen
4. Knowledge of health prevention/maintenance techniques
5. Attitudes toward physicians, medical care
6. Utilization patterns, number of visits, etc.

ACTIVITY 2 SELECT TRACER CONDITIONS

The description of the tracer method (Part One) explains why tracer conditions are selected to represent other similar medical conditions. It is not feasible to establish explicit criteria or standards for adequate medical care for all conditions found in a general pediatric population. Therefore, a limited number of conditions are selected. The adequacy of care is measured for these, and the results generalized for all care provided to the population of interest.

A tracer condition is a disease or abnormality which can be defined and described as a discrete condition with an identifiable cause and natural history (typical course of the illness and typical symptoms at each state).

Eight tracer conditions are presented in this manual for possible use:*

Otitis media
Vaginitis
Tonsillitis
Strabismus
Iron deficiency anemia
Lead poisoning
Eczema
Phimosis

The characteristics which a disease condition must have to be considered an appropriate tracer are: 1) an impact on a person's normal functioning; 2) a well-defined diagnosis; 3) sufficient rates of occurrence; 4) an identifiable response to medical care; 5) consensus by physicians on medical management; and 6) an understood epidemiology--how prevalence rates vary by

*Part Four contains detailed explanation of how these eight tracer conditions were selected for the Michigan EPSDT Evaluation Project.

certain non-medical factors such as age, race, geography, etc.* These decision criteria for appropriate tracers have been applied by the University of Michigan Evaluation Team in the selection of the eight tracers.

In implementing the next step, the user must select from the eight tracers those which would be most appropriate in your setting. Any number of tracers may be used, but we suggest two to four. More than four is excessive for most local care providers. There are two criteria which the user should consider in the selection of appropriate tracers: 1) the prevalence of the condition in the patient population; and 2) how the condition is represented on a medical care process chart.

STEP 1: Determine Prevalence

In order to identify enough cases of a tracer condition to satisfy sample size requirements, a tracer condition must occur sufficiently often in the patient population. It is necessary to estimate prevalence in the population by asking providers how often they see certain conditions. Or, you may obtain a more accurate estimate by examining a sample of medical, billing, or prescription records for a specified time period. If a condition does not occur often enough in your patient population, it is not an appropriate tracer.

STEP 2: Assure Representation of All Processes**

In the construction of the standards of care for each tracer (minimal care criteria), several different medical care processes were identified, and the standards for each process were developed separately. The following medical care processes were specified:

*See Kessner and Part Four of this manual for a more detailed discussion of these criteria.

**To assist in this step, a chart comparing medical care processes and tracers is provided on page 17.

1. History taking
2. Physical examination
3. Diagnostic tests
   a. Lab
   b. X-Ray
   c. Other
4. Treatment
   a. Chemotherapy/medication
   b. Other (e.g. patient education)
   c. Counseling
   d. Hospitalization
5. Follow-up
   a. Referral
   b. Monitoring

It is best if tracer conditions are chosen so that each of the above processes is represented by at least one tracer. For some tracers, each process may be represented, but one may be more important or frequent than another. For example, to diagnose and treat otitis media, history taking and physical examination are very important, but diagnostic tests such as X-Rays or audiometric exams are rarely used. On the other hand, for iron deficiency anemia, the history and physical examination are of less importance in the diagnosis than the diagnostic laboratory test to determine hematocrit level. The process chart on the next page may be used to select the tracers which represent various medical care processes.

TRACER CONDITIONS

Process Activities	Otitis Media	Vaginitis	Tonsillitis	Strabismus	Iron Deficiency Anemia	Lead Poisoning	Eczema	Phimosis
A. Evaluation								
1. History	+	+	+			+	+	
2. Physical Exam.	+	+	+	+			+	+
3. Lab, X-Ray		+	+		+	+		
4. Other				+				
B. Management								
1. Treatment								
a. Chemoth./ Medication	+	+	+		+	+	+	
b. Other	+			+			+	+
2. Counseling/ Patient Educ.				+	+	+		+
3. Hospitalize				+		+		
4. Specialty Referral	+	+	+	+		+	+	
C. Follow Up	+	+	+	+	+	+	+	

ACTIVITY 3 IDENTIFY STUDY POPULATION AND CHOOSE SAMPLE

Selection of individuals to be included in the study is dependent on characteristics of a particular setting and characteristics of the study population.

STEP 1: Delimit a Time Period for Evaluation

The selection of tracers to be used and the delimitation of the time period during which care will be assessed are required first steps in identifying the study population. Once these decisions are made, then every *patient* who was *treated for* one or more of the *tracer conditions during the time period* chosen is automatically eligible to be included in the study.

STEP 2: Identify and List Eligibles

The next step is to identify and list all those members of the patient population who are eligible. If the care setging under study has a relatively small patient population, it may be possible to include all eligible patients in the study population. However, if the patient population is large, it will be necessary to draw a sample of patients from the list of eligible patients to make up the study population. There are three issues to consider if a sample is drawn: 1) stratification of the eligible population to ensure that persons with certain characteristics are included in the sample; 2) sample size--how many persons should be in the final study population; and 3) sampling procedure--how to achieve a representative sample.

1. Stratification. It is often desirable to have a certain proportion of persons with certain characteristics drawn into the sample. It is possible that this would occur if a simple random sample

was drawn from the entire eligible population. But there is a way to ensure that this occurs without losing the randomness and representativeness of the sample. The procedure is called stratification, which is simply a technique for grouping members of the eligible population by characteristics that you want to be sure are represented in the study population. Then a sample is drawn randomly from each of the groups. If one group is larger than another, it is possible to over-represent a group in order to get approximately equal numbers of persons from each group. There are many techniques for stratification and sampling; it is highly recommended that a statistician be consulted to determine appropriate stratification procedures for your setting.

2. Sample Size. Before drawing a sample, it is necessary to determine what the appropriate sample size is for the study. The sample size required is governed by three determinations: a) an estimate of the amount of variance expected in the population for each variable, i.e., how "different" are individuals or groups; b) a decision on the level of precision needed, i.e., do you want to estimate adequacy within 2% or 5% or 10%; and c) how confident do you want to be in your estimates, i.e., 95% sure you are within 2%, or 99% sure you are within 2%, etc. Unless you are familiar with these issues, a statistician should be consulted for assistance.

3. Sampling. There are many methods for drawing a random sample; they all have a common objective--to derive a small group of persons from a larger group in such a way that the smaller group represents the larger group. The method you choose to select your sample should be recommended by a statistician familiar with the study and the data analysis plans.

Attrition

It is important to keep in mind when drawing a sample, that a certain number of persons will not participate in the study. This generally occurs for two reasons: 1) individuals deny consent for their records to be examined or to be interviewed (or both); or 2) individuals are inaccessible to data collectors. The attrition rate due to consent refusals may vary from less than five percent to as much as fifty percent, depending on the characteristics in the system being evaluated, and the attitude toward the person or agency requesting consent. For example, if the evaluators are not members of the system under study, there may be somewhat less likelihood of patients giving consent, depending on their attitude toward the system.

The nature of the data collection process may also affect attrition rates. In order to gather information, subjects must be accessible to data collectors. Addresses or telephone numbers change, respondents don't have telephones, respondents have moved or died. In the case of self-administered questionnaires, respondents may agree to participate and then not return completed questionnaires. Or a certain number of questionnaires may be returned, but are not usable because they are incomplete or illegible. The attrition rate due to inaccessibility also varies considerably depending on characteristics of the setting and the patient population.

In general, it is suggested that you plan on an overall attrition rate of at least 10%. The rate of attrition will be affected by your familiarity with and access to the patient population, and the consent procedures used. Studies have shown that the success rates for completed face-to-face interviews is about equal to telephone interviews in a given setting, and these are both equal to return rates for questionnaires. But the success rates for these three techniques vary widely between settings, due to variations in respondent groups such as mobility, likelihood of having telephone, literacy levels, etc.

ACTIVITY 4 REVIEW MINIMAL CARE PLANS

The minimal care plans included in this manual (Part Three) contain lists of explicit medical care performance criteria which should be delivered to persons with a tracer condition. They are used to measure the *adequacy* of care delivered by comparing *actual* care delivered for a tracer condition to the explicit *standards*.

They are called minimal care plans because they specify those items of care which panels of pediatricians and specialists deemed essential for the management of a tracer condition. The plans also contain two other categories of items of care: those which are deemed to be non-essential but recommended, and those which are not recommended. Recommended items are used for measuring degree above adequacy.

The minimal care plans for the eight tracer conditions were developed in a multi-stage process during which panels of specialists were asked to compile lists of essential and recommended performance criteria for each tracer and for each medical care process. These lists were independently compiled by the physicians, who then met in two groups to discuss and reach consensus on which items were essential, which were recommended, and which were not recommended.*

The evaluator should carefully review the minimal care plans for each of the tracers to be used in the study. Ideally, the plans should be discussed by staff physicians to get an idea of how closely their opinions match the plans. The plans may be adapted to more closely reflect established protocols for providing medical services in your setting.

*A detailed description of this process is included in Part Four.

If a majority of the staff providers in your setting disagree significantly with parts or all of the minimal care plans, it may be necessary to re-develop the standards for a particular tracer.* It is important to keep in mind, however, the implications of standards being developed by the same persons whose performance is being evaluated. If this is done, a built-in bias is generated which must be justified.

If local providers find the standards unacceptable, it is recommended that the process be repeated using physician panels composed of persons who are not members of the physician staff. Local physicians should approve members of the panel as "representative" judges, but should not then have veto rights over the standards the panels compile. The intent is to have impartial physicians develop standards, which contain minimally essential criteria.

It is important to emphasize the concept of minimal care plans. The concept of minimal is central to the tracer methodology. In many evaluations of quality of care, standards are developed by what should or would be done under optimal care conditions, and with the best and most modern medical care technology available. The tracer method takes into account the fact that in the majority of settings, optimal conditions rarely prevail. The minimal care plans reflect those standards that are minimally acceptable in average community-based practice settings/ The physician panels were constantly reminded that only minimally acceptable standards be deemed essential items. This was done so that the measurements of adequacy based on these plans would more nearly reflect actual rather than optimal medical care practice patterns.

*In this case, the user should consult Part Four for a description of the process by which the standards were developed, and repeat the process of establishing acceptable standards.

ACTIVITY 5 COLLECT DATA

Introduction--The process of data collection in implementing the tracer method will vary according to the characteristics of the evaluation setting. The objective of collecting data is to compile accurate information which is sufficient to answer the questions posed at the beginning of the evaluation effort, and to do this as efficiently as possible.

The data collection process falls into three natural stages: I) designing appropriate procedures and forms; II) obtaining access to records and informed consent from patients and respondents to review their records and conduct interviews; and III) collecting the data from one or more sources. Each one of these stages involves several activities which are discussed in detail in this section.

Because application of this method in a local care setting is based on the prior work of the University of Michigan project, the basic materials for activities in the data collection stage are provided in this manual. These include various forms, sample consent letters, and guidelines which permit the use of this evaluation method in the local setting. In some cases it may be necessary to adapt these materials to more closely reflect the questions chosen by the local care setting to answer in the evaluation, but their prototype exists within this manual.

The instructions and suggestions contained in this section of the manual are based on the experiences of the Michigan Evaluation Team. The number of different techniques for obtaining survey data such as this are too numerous to include in these instructions. But they all share the common fundamental principles of accuracy, completeness and reliability of

information collected; and maximum efficiency in the data collection process. The procedures and instruments developed by the Michigan Evaluation Team and contained in this manual are based on these principles.*

STAGE 1: DESIGNING PROCEDURES AND FORMS

Knowing what information is required is a prerequisite for data collection. The first step in preparing for data collection is to establish the procedures to be followed and to design the instruments (forms and support documents) which will be used to organize the data. The steps in this process are:

1. Identify sources of information and the type of information available at each source.
**2. Decide how information will be collected and recorded.
**3. Design data collection forms.
**4. Pretest procedures and forms.
5. Recruit and train data collectors.

Some of these steps must be done by the reader, others have been completed by the authors. In some cases the reader will need to modify the forms to make them appropriate to the delivery setting under study.

STEP 1: Identify Sources of Information

The key information used in this type of evaluation is actual care provided to a patient with a tracer condition. One obvious source of data is the patient's medical records. These records contain the most relevant and complete information on

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*Part Four contains a summary description of how the procedures and forms were developed, and some of the advantages and disadvantages of different data collection techniques.
**These steps have been done for you.

diagnosis and treatment provided to the patient. It is also true, however, that medical record-keeping varies in style, format, commonly used abbreviations, completeness, and perhaps most important, legibility. It is necessary to examine *samples of records* to see what information is readily obtainable and easy to interpret.

If the delivery system you are studying consists of one population of patients treated in a single care setting, it should not be too difficult to identify what information is available from medical records. But if the system consists of several settings with independent record systems, it will be necessary to examine records from each site to determine those variations in style, format, abbreviations, etc. Provider data collection forms and support documents may then have to be revised accordingly.

It may sometimes be necessary to supplement the information contained in medical records with information from other sources. The two most appropriate sources of information on diagnosis, treatment, and outcome are: 1) the physician and/or other medical practitioner; and 2) the patient or patient's family. If the physician is to be a source of information, one must decide *what* information is to be gathered and *how* to collect that information. For example, the physician may simply be asked to interpret or translate a record, or to fill in a structured questionnaire about the patient and the care provided, or to reconstruct the record into a summary narrative of her or his experience with the patient, including history, treatments prescribed, and number of visits. The evaluator must decide whether or not to collect information

from other sources such as the physician and/or patient family.*

The advantage of collecting information from physicians is that it may enhance the accuracy and completeness of medical information. Also, abstractors will be required to make fewer interpretations of a medical record and will require less training in medical terminology and processes.

The disadvantage of requesting information from physicians about treatment services delivered is that there may be a tendency for physicians to embellish a report, based on fragmentary records, or to recall details inaccurately. Also, a bias is introduced because of differentials between physicians' actual recall, and their motivation to provide the most complete and accurate information possible for the researcher.

Patients and families are the second source of information about health status, care and treatment received, and outcomes of care. They may be asked to provide information about compliance with medical regimens, follow-up contacts with providers, and attitudes toward the program under evaluation.

Similar information may sometimes be collected from both the provider and the family. This may include the nature of illness, care and treatment received, medicine prescribed, and outcomes of care. At times duplication of data collection is wasteful and inefficient; at other times it is useful for

*The Michigan Evaluation Project decided not to collect any information from physicians; the forms provided with these instructions reflect this. This decision was based on the fact that persons referred for diagnosis and treatment in the EPSDT system are seen by many different providers in many different settings. It was believed that this situation obviated the opportunity to obtain consistent information from over 300 providers, practicing independent of one another. It was decided that the information collected from this many varied sources would be more consistently accurate by relying on written records.

comparing and corroborating results. To maximize efficiency, the evaluator must decide which source of information would yield the most reliable information. To minimize unnecessary overlap the evaluator should decide when similar information is needed to augment and corroborate data collected. It is also often useful to compare findings on similar information.

For example, patients are likely to give different information about prescribed medicine than is found in medical records. The difference may provide the evaluator with a measure of patient understanding of medical regimens.

STEP 2: Collecting and Recording Information

The procedures for how data will be collected and recorded are provided by the authors via the instruments contained in this manual for each tracer. The instructions and forms provided in this manual are based on structured close-ended data collection techniques, largely because the information derived from medical records and patient reports about diagnosis and treatment lends itself to structured forms, and structured forms are the most efficient means of collecting large amounts of data* The data collection forms are discussed briefly below. Stage III of this Activity contains instructions for their use.

The "Provider Data Summary" form is a structured abstracting form, the contents of which are derived from the items contained in the minimal care plans. It is designed so that the abstractor reads and interprets the medical records, and abstracts certain required information onto appropriate places on the summary form.

*For a discussion of the criteria used for the design of data collection procedures and the advantages and disadvantages of various alternatives, see Part Four.

The "Patient Interview Form" is composed of several sections, each containing structured questions with alternative responses specified. The interview form is designed for personal or telephone interviews. The interviewer asks specific questions and then listens to and codes responses onto the form.*

STEP 3: Design Data Collection Forms

Once the sources of information have been identified, and procedures established for collecting information, the next step is to design data collection forms and support documents. This has already been done by the authors; forms and support documents are provided for each tracer condition in Part Three. These forms include:

"Reference Sheet"--This contains information on the physiologic characteristics of each tracer condition, common medical terminology associated with each condition, definitions of terms, and some diagnostic testing terms and procedures. These forms are used to train data collectors, and as information sources in the field.

"Provider Data Summary"--This is a structured abstract form for use in systematic collection of information from medical records.

"Patient Interview Form"--This is a structured interview form containing questions and coded response alternatives for use by interviewers in person-to-person or telephone interviews.

*The alternative procedure for eliciting information from patients is a self-administered questionnaire. This alternative was rejected by the authors for several reasons primarily: 1) questionnaires containing detailed material on health status and medical treatment may be difficult for respondents to interpret and answer; 2) interviewers could judge when additional information was needed to explain or clarify a given question; and 3) the response rate to requests for interviews would be higher in the population under study than the return rate of mailed questionnaires.

Step-by-step instructions for use of these forms are provided in the data collection section--Stage III.

STEP 4: Pretest Procedures and Forms

Once forms have been designed, and data collection procedures established, the forms should be tried out or pretested on a small number of records and patients. This will help to identify omissions and/or ambiguities which were inadvertently built into the forms. These mistakes almost always occur because it is impossible to know what will actually happen once data collection is begun.

Pretesting of the forms provided in this manual has already been done by the authors. However, if extensive adaptation is done on any part of any form, it is strongly suggested that the revision be pretested. This can be accomplished by selecting a small number of patients in the study population, and conducting data collection procedures on these cases. Insights derived from the pretest may then be used to revise forms and procedures. Results of the pretest may also be used in training data collectors.

STEP 5: Recruit and Train Data Collectors

Before going out into the field to collect data, the appropriate number and type of persons to actually abstract medical records and interview respondents must be assembled and trained. The number of people required will depend on 1) the size of the study population or sample; and 2) how accessible are the medical records and patients. The type of persons appropriate for data collection varies widely and will depend upon who is available in your setting.

The sheer number of records to be abstracted and interviews to be conducted will dictate the size of the data collection staff, as will the accessibility of the desired

information. For example, if you need to abstract 1,000 medical records that are in several different sites, the time it would take to accomplish this task will depend on 1) average time required to locate and abstract one record; 2) travel and set-up time between the sites; and 3) number of abstractors working.

The best way to plan data collection and determine appropriate number of abstractors is to:

--Estimate amount of time to get to the sites of information. This will include travel time to care settings (if more than one is involved), time to travel to respondents if person-to-person interviews are conducted, or time to reach respondents by telephone.

--Estimate amount of time to actually collect information for one case. This will include average time to abstract one record, and average time to conduct one interview.

--Calculate how much total time would be required to complete data collection for varying numbers of data collectors--e.g. six months using one abstractor, three months using two, etc.

--Decide how much total time would be best to spend on the data collection phase, given other considerations such as length of total project, time to complete other phases, and time at which results are needed.

--Recruit and train appropriate number of data collectors.

The estimates in the first two steps above can be made using information obtained from the pretest.

The types of persons best suited to be data collectors in this type of project are persons who are familiar with illness and medical care processes--for example, registered nurses. However, the skills needed to collect accurate and complete information can be taught, so it is not imperative that experienced medical persons be used. The only imperative requirement is that candidates have a demonstrated ability to learn and understand the material, including various medical processes and/or medical terminology. This could include persons such as nurses aides, lab technicians or persons with a bachelor's degree in the biological sciences. The level of knowledge and experience which abstractors possess will clearly affect the amount and intensity of training required by the evaluator.

Data collector training should be conducted by the evaluator or other person thoroughly familiar with the project, ideally in conjunction with a physician. The "Reference Sheets" included in the following section are provided for use in training, as well as for use by abstractors in the field. Training for medical record abstracting should include the following steps:

1. Review of each tracer condition in a standard pediatric textbook.
2. Explanation by a physician of the signs, symptoms, and typical progression of each tracer condition.
3. Review of the synonyms, medical terminology, and definitions associated with each tracer.
4. Review of typical diagnostic tests and medications found on medical records which are associated with each tracer.
5. Review of sample medical records for each tracer.
6. Practice abstracting sample medical records and reviewing results and discrepancies between abstractors.

Periodic debriefing sessions should be held throughout the data collection phase to provide abstractors with an opportunity to ask questions and report problems which develop in the field. Also, periodic checks should be made to test for inter-abstractor reliability--i.e., whether abstractors are interpreting medical records consistently. This is accomplished by having all abstractors do each of several records in the field, and then comparing the information obtained. Any discrepancies should be identified and discussed with all data collectors, so that inconsistency in interpretation and accuracy may be minimized.

The steps in training data collectors for telephone or person-to-person interviews are as follows:

--A trained interviewer should present information to data collectors on the general techniques of interviewing, including problems and mistakes.

--Each question on the interview form should be explained. This should include discussion of the types of information they are expected to elicit and the types of responses they are likely to get, and how to code them.

--Project staff and data collectors should conduct mock interviews with one another. The completed forms should then be compared, to identify variations in interpreting and recording responses.

Similar debriefing sessions and consistency checks should be conducted during the interviewing stage.

STAGE II: CONSENT PROCEDURES

Before data collection begins, informed consent should be obtained from providers and patients or their families to review their medical records and to interview them. The ethical issues of informed consent as a legal requirement of survey research have not been resolved, partly because situations of survey research vary so much. Also, ownership of medical records is still being debated. For these reasons, the requirement that consent be obtained from providers and patients is controversial and not universally accepted. For example, if the evaluation effort is being conducted by persons who are members of the system, and physicians do not object to their records being reviewed, it can be argued that consent from patients is unnecessary. Similarly, if consent from physicians is unnecessary because of salary or contractual agreements, and the evaluation is being conducted by the administrative unit of a care system, it may be argued that no consent is required. On the other hand, if the evaluation is being conducted by persons not associated with the care system, as on a contractual basis, it may be argued that consent is required of both physicians and patients.

The user must determine consent requirements in her/his own setting. The Michigan Evaluation Project firmly advocates that, regardless of situations and arguments, it is best to obtain informed consent from both physicians and patients to review records and conduct interviews.

STEP 1: Physician Consent

The process for obtaining access to records by physician permission will vary depending on the care setting. If the evaluator is a member of the system under evaluation, it may simply require a meeting with staff physicians to

obtain unanimous consent to review any or all of their records. If the evaluator is not a member of the system under evaluation, and/or if physicians are not contractually connected with the system, then it will be necessary to inform the physicians of the nature of the evaluation project, and obtain permission (preferably by telephone) to review records of specific patients. A sample letter which was used in the Michigan EPSDT Evaluation Project is found in Appendix I.

STEP 2: Patient Consent

The process of obtaining informed consent from patients includes providing patients with a written explanation of the reasons for reviewing their records, and acquiring a written and signed consent form. This process is most efficiently done by letter in any type of care setting. In certain instances, consent could be obtained at the time the patient is at the care setting. Sample informed consent forms are found in Appendix I.

STAGE III: COLLECT DATA

The forms and support documents included in this manual for use with eight tracer conditions were developed and used by the authors in the Michigan EPSDT Evaluation Project. This is reflected in the nature of the information required by the forms, and the types of questions asked. While some of the items, especially on the interview form may be deleted because they are irrelevant in your setting, most of the form applies to any type of medical care setting, and any patient population.

This section contains instructions for use of forms for one tracer--otitis media--as an example in the explanation of use of the forms. Similar forms for each of the remaining seven tracers are presented in Part Three.

STEP 1: Creating a Tracking System

After the samples has been drawn, but before data collection actually begins, a system must be designed for keeping track of cases throughout the data collection process, and for assuring confidentiality of medical records and respondents. The design of this tracking system will vary according to the characteristics of the evaluation setting and the complexity of the data collection process.

It is most important in this type of evaluation to maintain and guarantee complete confidentiality of information provided by both providers and patients. Guaranteed privacy not only contributes to the accuracy of information gathered, but acknowledges the rights of respondents and the integrity of the evaluators.

It is also important to develop a scheme for keeping track of patients and providers. Not every case selected for the sample will remain in the sample throughout the data collection process. In a study of this type, with two stages of data collection, a given case may be included in the first, but not in the second stage, or in neither. For example, a medical record may be lost, a family may have moved, or a patient may refuse to participate.

The most common technique for maintaining confidentiality and tracking cases is to assign a study number to each case in the sample. Numbers are assigned consecutively, and recorded on an identification card. This card contains the name, address, tracer conditions, parent's name (if applicable), telephone number, physician, and any other identifying information which will be useful in the study. These I.D. cards are filed in numerical order, so that identifying information may be obtained when necessary. Only members of the evaluation project

have access to these cards. All other forms containing information about a given case are labeled with the study number assigned to that case. In this way, all information and forms relevant to a given case, or family, are linked via the study number, but contain no identifying information. Providers whose records are examined may be assigned their own set of numbers, or may be identified by using the patients' numbers. In any case, you must be sure to assign identifying numbers to providers and patients in such a way that information regarding care received by a given patient may be linked to the physician (or physicians) who provided the care.

As a given case moves through the data collection process, events relevant to that case are recorded on the patient's and provider's I.D. card. For example, when a letter requesting consent is sent, the card may be *flagged* indicating a letter was sent. When a signed form is returned with consent given, that fact may be recorded on the card, and the card moved to a file of cases awaiting review of medical record. If a response is returned with consent not granted, that fact would be recorded on the card, and the card moved to a file of *closed cases*. Similarly, when a medical record has been examined and an interview conducted for a given case, that information would be recorded on both the patient and provider cards, and the patient card moved to a file of *completed cases*. Note that the provider card would only be moved if that was the only patient seen by that provider. If that provider saw more than one patient in the sample, her or his card would not be moved to the completed cases file until all of the records of patients seen by that physician had been reviewed. Using this technique, the progress and status of each case in the sample is *tracked* throughout the data collection process. And because the status of each case is always known, there is less risk of losing cases, or telephoning before the initial contact letter is sent, or any other of the numerous mishaps and scheduling problems that may occur in a complex data collection plan.

STEP 2: Using Data Collection Forms

FORM 1: PROVIDER DATA SUMMARY

The Provider Data Summary is a structured abstract form derived from items on the minimal care plans.* It contains lists of criteria divided by processes, which the physician's medical record should indicate were performed. Each section contains one or more of the following types of information: 1) items which appear on the minimal care plans as *essential*; 2) items which appear on the minimal care plans as *recommended*; and 3) items which do not appear on the minimal care plans, but were added on to the minimal care plans as *additional recommended items* by one or more physicians. These items are separated from the others, because the panels of physicians did not agree on their appropriateness, but neither did the panels indicate that they should be deleted. Essential and recommended items are numbered within each section, while additional recommended items are merely listed under one number, with a check-off space provided.

The provider form is structured so that two types of information may be indicated simultaneously: whether the item was actually performed by the physician, and what the finding was. These are indicated in the three spaces on the right side of the page. For example, item "1" in "History" (Section IIIA), says that the physician should have asked the patient to describe whether she or he has had or now has physical symptoms associated with otitis media. If there is an indication on the record that the patient has or had otitis media symptoms, the "Yes" column would be checked; if there is an indication on the record that the patient does not or has not had these

*Refer to Part One for a review of minimal care plans and Part Four for rationale for their development.

symptoms, then the "No" column would be checked. If there is no indication on the record about past or present symptoms, then the "NM" (Not Mentioned) column would be checked. In both the yes and no instances, there was an indication that the item was performed, so the provider would get credit for having performed this item if either the "Yes" or "No" column were marked. When the "NM" column is marked, no credit is given.

This structure for recording information is used consistently throughout the form, but the codes vary somewhat depending on the nature of the item. In some cases, not all columns are appropriate, so they are deleted. The appropriate use of these forms will be come more clear as each section of the form is discussed in detail.

Part D of the form is self-explanatory, so is omitted in the following section-by-section discussion. It simply requires a verbatim transcription of all diagnostic information, including dates, which appears in the record. The terminology of the diagnosis may be the actual tracer condition name, a synonym for the tracer, a presumed or probable diagnosis, a rule out (R/O) statement, or an associated condition. A list of diagnostic terminology for each tracer appears in Appendix II.

Complete forms for the seven other tracer conditions are found in Part Three of the Manual. The rules for their use may be generalized from this discussion of the sample form for otitis media.

SAMPLE

Study Number_____

Provider Data Summary

[OTITIS MEDIA]

I.A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

2. Referral status
   1. Initial referral from_____
   2. Secondary referral from another physician
   3. Other_____
   9. Unknown
3. Date of Birth_____
4. Date of Referral_____
5. Date of original appointment made at time of referral_____

STUDY NUMBER - Each case should be assigned a study number to facilitate tracking of that case through the evaluation process. A study number permits both confidential record keeping and simplified cross-referencing of cases. (See page 36 of this manual for more detail.)

GENERAL INFORMATION - This information should be completed by the data collector prior to a visit to the physician's office. The questions reflect a system where the patient was referred from a health department screening clinic; however, these questions may be used for any referral situation, and NA used when care was provided on a self-referral basis.

SAMPLE

B. INFORMATION FROM MEDICAL RECORDS

6. First date seen after referral_____

7. Total number of visits within one year from date of first visit_____

8. Previous contacts between provider and patient

   1. Has seen patient during year prior to this visit for otitis media
   2. Has seen patient within past two years for otitis media
   3. Has seen patient within past two years but not for otitis media
   4. Has seen member of patient's family but not patient within past two years
   5. Has seen patient or patient's family before, but not within past two years
   6. No previous contact
   9. Unknown

NOTE: Provider = same physician <u>or</u> same record system

INFORMATION FROM MEDICAL RECORDS - The information requested in this section is useful for determining 1) health care utilization rates of the study population; 2) number of visits in an episode of a tracer condition; and 3) the nature of the previous contact, if any, between patient and provider.

The questions should be answered with respect to the time frame you have established for the study. For example, if you decide to begin with all visits for acute otitis media in a given month one year ago, then responses should be calculated for the year prior and the year since that month.

SAMPLE

	Yes	No	NM
II.A. History			
1. Description of presenting symptoms (e.g. pain, drainage, fever. . .)	___	___	___
1a. Duration of symptoms			
___ 3 mos. or more ___ less than 3 mos.			___
2. History of middle ear infections or symptoms	___	___	___
3. Associated infections of respiratory tract	___	___	___
4. History of allergies? (Eczema?)	___	___	___
5. Check any of the following items mentioned on the record:			
___a. Family history			
___b. Congenital Anomalies (e.g. cleft palate?)			
___c. History of previous treatment for otitis media			
___d. Other diseases			

HISTORY - Item "1" in this section requires information on whether the physician asked for a description of presenting symptoms. If there were presenting symptoms described, then the "Yes" column would be checked. If the physician indicated on the record that the patient reported no symptoms, then the "No" column would be checked. If the record has no information at all on presenting symptoms, then the "NM" column would be checked.

Occasionally an item does not fit into the three-code format, such as item 1a. In this case, precoded answers are supplied. If there is no information, then the "NM" column would be checked.

SAMPLE

	Abn	Norm	NM
B. Physical Examination			
1. Tympanic membrane examined_____	___	___	___
2. Temperature taken (abn= 99.6 oral) Degrees:_____	___	___	___
3. Pharynx examined_____	___	___	___
4. Check any of the following items mentioned on record			
___a. Auditory canals observed			
___b. Cervical lymph nodes palpated?			
___c. Nose checked for obstruction, discharges, or inflammation?			
___d. Edema or tenderness over mastoid?			
___e. Facies (mouth breathing)			
___f. Abdomen checked?			
___g. Chest checked?			

PHYSICAL EXAMINATION - Item "1" in this section requires information on whether the tympanic membrane was checked, and what the finding was. If the record indicates that the tympanic membrane was abnormal, then column "Abn" is checked; if the record shows that the tympanic membrane was checked and found to be normal, then column "Norm" is checked. If either of these columns are checked, then the physician gets credit for having performed this item. If there is no mention of the tympanic membrane anywhere on the record, then the "NM" columns is checked, and the provider does not get credit for performing this item.

The items listed under item "4" in this section are the additional recommended items previously described. If any of these are mentioned on the record, then a check is simply entered in the space beside the item.

SAMPLE

C. Diagnostic Tests

1. Check if any of the following tests were done and fill in results

___a. Audiometric examination (Hearing test)
Results_____

___b. Movement of tympanic membrane
Results_____

___c. Culture of the drainage
Results (e.g. bacteria)_____

___d. X-ray
Results_____

DIAGNOSTIC TESTS - The structure of this section is specific to otitis media. The format indicates that no diagnostic tests were deemed essential on the minimal care plan for otitis media. Therefore, all the items in this section are in the "check-off" format. If any of these items are mentioned on the record, the data collector would check the space provided and record the results.

Refer to another Provider Data Summary form in Part Three to see the usual structure for this section. If a required or recommended diagnostic test is done, then the "Yes" column is checked, and the results recorded in the space provided. If there is an indication on the record that the provider attempted to do the test, and was unable to because the patient did not cooperate, or did not show at the lab, then the "A" column is checked. This is rarely used, but it provides for those times when the record clearly shows intent on the part of the provider. If there is no indication or mention on the record, and no lab report of the particular test, then the "NM" column is checked.

SAMPLE

E. Treatment	Yes	No	NM
1. Penicillin (or other antimicrobials) prescribed?_____ (Specify type & dose)	___		___
2a. Was there allergic rhinitis?	___	___	___
2b. Were antihistamines prescribed?	___	___	___
3. Parent education?_____ (Detail)	___		___
4. Tonsillectomy?	___	___	___
4a. If yes, was there:			
1. Peritonsillar abcess	___	___	___
2. Unilateral tonsillar enlargement	___	___	___
3. Obstruction of airway (breathing)	___	___	___
5. Adenoidectomy?	___	___	___
5a. If yes, was there:			
1. Recurrent otitis media with a frequency of at least three epidodes per year	___	___	___
2. Recurrent otitis media with a frequency of at least three times within 18 months with hearing loss	___	___	___
6. Check any of the following in the record:			
___a. Decongestant nose drops	___d. Analgesics		
___b. Shepards tubes	___e. Other_____ (Specify)		
___c. Myringotomy			

TREATMENT - The structure for this section is the same as the others, with "Yes" meaning that this treatment was prescribed, with space to specify type of drug and dose, or other details of treatment. The "No" column is provided for those cases where the record specifically indicates that the provider decided not to prescribe a particular treatment. You will note that the treatment section contains items that are contraindicated except in certain circumstances. For example, if a tonsillectomy (Item 4) is performed, the records must indicate that one or more of the items in 4a were present. Similarly, if antihistamines are prescribed (Item 2b), then Item 2a must have been checked "Yes." These specific treatment requirements are indicated clearly on the minimal care plans.

SAMPLE

F. Follow Up

1. Does provider have a routine follow up procedure?

___No

___Yes (explain)_____

	Yes	A*	NM
2. Was patient re-evaluated? If yes, indicate _____ (time period)	___	___	___
3. Was hearing evaluated? By whom? (Name and/or type of provider) _____ Date:_____ Results:_____	___	___	___
4. Parent education	___	___	___

*Attempted

FOLLOW UP - This section requires information on what follow up was actually performed, and reflects the specification on the minimal care plans of time period appropriate for each item. Item "1" is optional, since this information can only be elicited from office staff.

If the record indicates that a follow up item was done, but the time period is not specified, then the "Yes" column would be checked, but the time period left blank or "NM" written in the space. If the record shows that a follow up item was done within a certain time, then the "Yes" column would be checked, and the time entered in the space exactly as it appears on the record. If the record shows that the provider indicated to the patient that a return visit or contact was necessary, but there is no indication that the patient complied, then the "A" (attempted) column is checked, and the time period entered, when given. If no follow up activities or attempts are indicated on the record, then the "NM" column is checked.

SAMPLE

G. Outcome Indications	Yes	No	NM
1. Remission of acute symptoms within _____(time period)	___	___	___
2. Remission of signs of acute otitis media (normal TM) within_____ _____(time period)	___	___	___
3. Normal audiometric examination for chronic otitis media within _____(time period)	___	___	___
4. Remission of chronic symptoms within _____(time period)	___	___	___

Indicate any other change of health status recorded in the record:_____

OUTCOME INDICATIONS - The minimal care plans often specify what outcomes of treatment are expected within a given time period. For Item"1" for example, if the record indicates that the patient had a return visit, and acute symptoms were reduced, then the "Yes" column is checked, and the time between the two visits recorded. If the record indicates a revisit with symptoms unchanged or worse, then the "No" column is checked, and the time period recorded. If there is no indication of a reutrn visit, or no outcome information is in the record, then the "NM" column is checked.

SAMPLE

H. Referral Status — Yes No NM

1. Was patient referred:
   If yes, specify: Name_____
   Organization_____
   Address_____

REASON FOR REFERRAL_____

I. Information from Site Visit

Provider's organizational affiliation

1. Solo private practice
2. Group private practice-single specialty
3. Group private practice-multi-specialty
4. Public ambulatory clinic-different organization than referring organization
5. Public ambulatory clinic - same organization as referring organization

III. Abstractor's Information

___Initials _____Date abstracted _____Time to abstract

Remarks:

REFERRAL STATUS - This section provides space to record information on secondary referrals. If the patient was referred, then the second provider must be contacted, and another abstract form filled out.

INFORMATION FROM SITE VISIT - This section provides space to record information on the type of setting in which care was delivered. It may or may not be appropriate for your setting.

ABSTRACTOR'S INFORMATION - It is important to keep track of who abstracted each form and when. It is also helpful when reporting results of the study to report average time required to abstract the records. Finally, space is provided for remarks by data collectors

FORM 2: PARENT/CHILD INTERVIEW FORM

The interview forms provided in this manual contain eight sections, only Section III-VI of which are specific to a particular tracer condition.

The sections which comprise the interview are:

Cover Sheet		
Section I	-	Introduction
Section II	-	Health Status
Sections III-VI	-	Tracer Specific Questions about Screening and Medical Care
Section VII	-	Attitudes Toward Program
Section VIII	-	Medical Care Questions Regarding Secondary Referral

For a given interview, some sections may be used more than once; in others, each section will be used only once. This will become clear as each section is described.

The interview form is designed for interviews to be conducted either by telephone or in person. It consists of questions, with alternative responses provided, which may be coded during the interview.

Interviews should not be conducted until the child's medical record has been abstracted. When there is more than one child in a family, the interview should not be conducted until the records of all the children in one family are abstracted. In general, interviews for each child should be conducted at one session.

The interviewer should contact the patient or patient's family to arrange for scheduling a time for the interview. If the interview is conducted in person, it is best to meet at the

patient's home, but interviews may be conducted in the care setting. However, the respondent should be guaranteed privacy and confidentiality. The initial contact to request an interview should be made by letter, and then followed up by a telephone contact to arrange an agreeable time and place to meet.

If the interview is to be by telephone, an initial letter explaining that an interviewer will call and outlining the types of questions that will be asked should be sent four to seven days before the telephone contact. A sample letter is found in Appendix I.

The Michigan EPSDT Evaluation Project utilized telephone interviews, and the introductory part of the interview reflects this. This section can easily be adapted for personal interviews.

Following are some general instructions on conducting the interviews, after which each section will be discussed in detail. When preparing for an interview, determine whether there is *more than one child* in a family and/or whether *one or more children have more than one tracer condition*. These combinations determine how many copies of each section to have on hand before beginning an interview.

You will need:

--one cover sheet for each <u>person</u>

--one introduction sheet for each <u>family</u>

--one <u>or more</u> tracer-specific form(s) (Sections III-VI) <u>for</u> each <u>person</u>

--one opinion sheet for each <u>family</u>

--one secondary referral form for each <u>person</u> who was seen by more than one provider

For example, if a family has two children, one of whom has one tracer and one of whom has two tracers, you will need two cover sheets, one introduction sheet, two health status sheets, three tracer-specific forms (appropriate for the tracers the children have), and one opinion sheet.

Fill in all known information in advance, such as child's name, tracer names, doctors' names, etc. It may be easier to cross out all inappropriate alternate pronouns before begining when possible.

When a family has more than one child, or a child with more than one tracer, it is suggested that you estimate the time for completing interviews for all tracers and all children, and ask the respondent if he/she has time to answer all questions. Experience has shown that an inteview for one child with one tracer takes an average of 12-15 minutes.

A discussion of each section of the parent/child interview form follows. For the most part, appropriate use of this form is obvious. A brief review of each section noting any special features precedes the example provided. The Parent/Child Interview Form is the same for all tracer conditions, with two exceptions. The exceptions occur in Section III; an explanation of which is contained in the review of that section, and suggestions for adaptation made. In general, however, knowing the appropriate use of the interview form for otitis media will permit use of the form for the other seven tracers.

The first page of each section of the interview contains space for the study number. Care should be taken by data collectors to note the appropriate study number each time a space for it appears.

COVER SHEET

This page is generally self evident. The last item refers to a provider that the child may have seen who was not known prior to the interview, but who was reported during the interview. Medical care received from these providers may or may not be followed up as part of the study, depending upon the limits set by the evaluators (or by the study design).

INTRODUCTION

This page provides a suggested format for introducing yourself to a respondent, and for handling problems which may occur, e.g., a non-received letter. It may be adapted to accommodate in-person interviews.

HEALTH STATUS

The questions and instructions in this section are self-explanatory. It is sometimes necessary for the interviewer to ad lib to accommodate inconsistent answers. For example, a problem may be mentioned in Q. 4.2.a which was not mentioned in Q. 3. In that case, it may be necessary to clarify this response by saying, "Does Jimmy have (the problem) now?", and if the answer is "Yes," add it to the response for Q. 3.

SAMPLE

Study Number(s)_____

PARENT/CHILD INTERVIEW FORM

COVER SHEET

Patient's Name_____

Telephone Number_____

Parent/Guardian Name_____

Respondent's Name (if different)_____

Respondent's Relationship to Child_____

First Referral Provider_____

Additional Referral Provider_____

_____

Non-Referral Provider's _____

_____

NOTE: Fill out one cover sheet for <u>each person</u> in the sample.

SAMPLE

Study Number(s)_____

PARENT/CHILD INTERVIEW FORM

INTRODUCTION

(Section I)

I. INTRODUCTION

I am _____(Name) from_____. Did you receive a letter a few days ago telling you that someone would be calling to talk about _____'s [and_____'s] visit in _____(month and year) to_____(providers).

___Yes → Would you tell me who would be the best person to talk about _____'s [and_____'s] health? _____(fill in name and relationship). Could I talk with you [her] [him] now?

___Yes → [I would like to ask you about _____first, and then come back to _____.] (GO TO SECTION II)

___No → When might I be able to? _____(fill in day and time)

___No → I am a member of a group which has been asked to talk with some people who have been treated by_____ to find out what they think about it. _____'s [and_____'s] name(s) was [were] selected at random from people who had been treated at_____ and who had certain health problems.

I would like to send you a letter explaining why we would like to interview you about _____'s [and_____'s] experience at_____. After the letter is sent, I will call back. Could you please give me an address where a letter will reach you?_____

Is there a time which would be most convenient to call?_____

_____

Remarks:

SAMPLE

Study Number(s)_____

PARENT/CHILD INTERVIEW FORM

HEALTH STATUS

(Section II)

II. GENERAL HEALTH

First, I would like to ask you a few questions about _____'s health now.

1. Can you tell me how you would rate_____'s general health? Would you say it is: (READ THE FOLLOWING AND MARK RESPONSE)

   ___1. Excellent ___3. Average ___5. Very Poor

   ___2. Good ___4. Poor

2. Does _____have any health problems now?

   ___1. Yes (Go to Q. 3)

   ___2. No (GO TO SECTION III)

3. What are _____'s health problems? (LIST ALL PROBLEMS MENTIONED)

4. Do any of _____'s health problems keep him [her] [you] from doing what children [people] his [her] [your] age usually do?

   ___1. No (GO TO SECTION III)

   ___2. Yes → a. Which problems cause limitations?

   b. In what way are [is] you [she] [he] limited?

   c. Would you describe that as a mild, moderate, or severe limitation?

   ___1. Mild ___2. Moderate ___3. Severe

   ___8. DK/No response

SCREENING/TREATMENT

Sections III-VI constitute the main body of the interview and contain questions about screening and treatment experiences. In general, the questions and appropriate ways of recording responses are self evident. A few general guidelines are included in the discussion below.

This part of the interview is the only part that is tracer-specific. Most of the questions in these sections are structured so that the appropriate tracer name or synonym may simply be inserted in place of otitis media. Please note that the formal name of the tracer condition is not used in the early part of the interview. Vernacular expressions and synonyms are used in conjunction with the formal name until it is safe to assume the respondent understands the medical term for the condition being discussed. Appropriate vernacular and synonymous terms for each tracer were suggested by the physician member of the evaluation team. Part Three contains adaptations of the interview forms for each of the seven other tracer conditions.

If the patient did not complete a screening process prior to receiving treatment, Section III may be omitted. If the patient was screened at the same setting where treatment was provided, Section III may be adapted.

If a patient has or has had more than one tracer, Sections III-VI must be completed for each tracer. However, the following questions should be omitted on second and subsequent interviews concerning the same child: Section III - Q.'s 4 and 5 and Section IV - Q.'s 1-6 (if the child was seen by the same provider for all tracers).

These sections of the interview were continuously reviewed and revised in an attempt to remove ambiguous or unclear questions or instructions. Inevitably, however, there will be discrepancies in understandings and interpretations by data collectors. It is strongly suggested that several practice interviews be conducted by abstractors over the telephone, with a trained interviewer listening on an extension, and other abstractors also listening and recording responses. The results of these practice interviews should then be compared and discussed. This procedure will highlight inter-abstractor differences, and minimize inconsistencies in interpretations and coding in the field.

SAMPLE

Study Number(s)_____

PARENT/CHILD INTERVIEW FORM

SCREENING/TREATMENT

(Sections III-VI)

FILL IN BEFORE INTERVIEW:

Tracer: Otitis Media Patient's First Name_____Age_____

First Date Seen After Referral:_____

Reason for Referral (from referral form)_____

Diagnosis (Tracer or synonym from Provider Summary Form):

****

III. Screening Clinic Experience

Now I would like to ask you some questions which are specifically about _____'s [your] experience at the screening clinic.

Records at the screening clinic report that_____might have had otitis media, or an ear infection, or hearing troubles [and _____]. [I would like to ask you about otitis media or ear infection first, and then come back to _____.]

1. When you went to the screening clinic in _____(month and year) did you think _____ had or might have had ear or hearing trouble?

   ___1. Yes (GO TO Q. 2)
   ___2. No (GO TO Q. 3)
   ___8. DK/DR/no response (GO TO Q. 3)

2. Why did you think something was wrong? (DO NOT PROBE)

   ___1. draining from ears
   ___2. earaches
   ___3. difficulty in hearing
   ___4. unable to sleep due to ears
   ___5.
   ___6.
   ___7. Told by a doctor
   ___8. DK/DR/no response

SAMPLE

3. Had _____ever had ear or hearing trouble before the screening visit?

___1. No (GO TO Q. 4)

___2. Yes

a. About when did_____first have a problem with His [her] ears?

___1. Less than three months prior to screening

___2. More than three months prior to screening

b. Did you [she] [he] see a doctor about it before screening?

___1. Yes ___2. No ___8. DK/DR/no response

c. What happened with that illness?

___1. Cured ____3. No change

___2. Cured, but recurred ____4. Got worse

___8. DK/DR.no response (GO TO Q. 4)

4. Was _____ being treated by a doctor for anything at the time you went to the screening clinic?

___1. No (GO TO Q. 5)

___2. Yes

a. What for? (PROBE: Anything else?)

If remarks in (a) ARE NOT otitis media or related to otitis media, GO TO Q. 6)

If remarks in (a) ARE otitis media or related to otitis media, PROBE for type of treatment:

1. Medication:

2. Other:

(GO TO Q. 6)

___8. DK/DR/no response (GO TO Q. 5)

SAMPLE

5. About how long before screening did _____last see a doctor? (Approximate date last seen prior to screening)

___1. Less than three months prior to screening

___2. More than three months prior to screening

6. What did they tell you at the screening clinic about_____'s ear or hearing trouble?

NOW I WOULD LIKE TO TALK WITH YOU ABOUT _____'S [YOUR] VISITS TO A DOCTOR AFTER GOING TO THE SCREENING CLINIC.

IV. Experience with Provider(s)

I understand _____was seen by Doctor_____ at_____(place or address) for ear infection.

1. Did the screening clinic suggest you go there?

___1. Yes

___2. No → a. Why did you go there?

___8. DK/DR/no response

2. Did you make the appointment or did the screening clinic make it for you?

___1. Self

___2. Clinic

___8. DK/DR/no response

3. Had _____been to that doctor (or clinic) before?

___1. No (GO TO Q. 4)

___2. Yes → a. Is that where he [she] [you] usually went?

___1. Yes (GO TO Q. 5)

___2. No (GO TO Q. 4)

___8. DK/DR/no response (GO TO Q. 4)

SAMPLE

4. Was there a doctor or clinic that _____usually went to?

___1. No (GO TO Q. 5)

___2. Yes (make sure to ask the last question on this form)
a. Who, where was that?

___8. DK/DR.no response (GO TO Q. 5)

5. Did you go to Dr._____(referral provider) because of the screening referral, or because something else came up?

___1. Because of the screening referral

___2. Something else came up

___3. Other (Specify)_____

___8. DK/DR/no response

6. Did you have any difficulty in getting _____to the appointment with the doctor?

___1. No (GO TO Q. 7)

___2. Yes
a. What kind of difficulty? (e.g. child care, transportation, etc. DO NOT PROMPT)

___8. DK/DR/no response (GO TO Q. 7)

7. Did the doctor give _____and medicine or a prescription for medicine for otitis media?

___1. No (GO TO Q. 11)

___2. Yes (PROBE for medicine or prescription)

___a. Medicine (GO TO Q. 9)

___b. Prescription (GO TO Q. 8)

SAMPLE

8. Was the prescription filled?

___1. No
a. Why wasn't the prescription filled?

(GO TO Q. 11)

___2. Yes
a. Do you remember what kind of medicine it was?

___1. Yes Specify_____

(GO TO Q. 9)

___2. No (GO TO Q. 9)

___8. DK/DR/no response (GO TO Q. 9)

9. Did you have any problems in getting_____to take the medicine?

___1. No (GO TO Q. 10)

___2. Yes
a. Specify any problems:

___8. DK/DR/no response (GO TO Q. 11)

10. Did _____take the medicine as the doctor suggested? (PROBE for duration, dose, intervals)

___1. Yes

___2. No
a. Why?

___8. DK/DR/no response

11. Did the doctor recommend anything else, such as hot packs, not swimming, or aspirin?

___1. No (GO TO Q. 12)

___2. Yes
a. What?

___8. DK/DR/no response

SAMPLE

12. Did anyone at the doctor's office check with you after your visit to see how _____'s ear or hearing problem was getting along? For example, did they: (Check all that were done)

___1. Ask you to call them on the telephone?

___2. Call you on the telephone to check?

___3. Ask you to bring _____back for a checkup in a certain number of days?

IF (3) WAS ANSWERED "YES", ASK:

a. Did you go?

___1. No

___2. Yes

___8. DK/DR.no response

___4. Other (Specify)_____

___8. DK/DR/no response

V. Follow up/Continuing Care/Secondary Referrals

1. Did the doctor you went to suggest that you obtain any other kind of treatment, or refer you to another doctor for further study or care for this problem?

___1. No (GO TO Q. 2)

___2. Yes → a. To whom? (Doctor's name and address)

b. Did you go there?

___1. No (GO TO Q. 2)

___2. Yes (GO TO SECTION VIII, THEN GO TO Q. 2, SECTION V)

___8. DK/DR/no response (GO TO Q. 2)

SAMPLE

2. Has _____been to see any other doctor about this problem since the screening visit?

___1. No (GO TO Q. 3)

___2. Yes
a. Who? (Doctor's name and address)

(REPEAT SECTION VIII, THEN GO TO Q. 3, SECTION V)

___8. DK/DR/no response (GO TO Q. 3)

3. Is _____still receiving care or treatment for otitis media?

___1. Yes
a. Has there been any improvement?

___1. Yes (GO TO Q. 4)

___2. No (GO TO Q. 4)

___2. No
a. Was _____'s ear or hearing problem helped by the treatment he [she] received?

___1. No (GO TO Q. 4)

___2. Yes
a. Why do you think so? (PROBE with answers to Q.2, Section III, if any)

___8. DK/DR/no response (GO TO Q. 4)

4. Has _____had any trouble with his [her] ears since last contact with a doctor?

___1. No

___2. Yes
a. How many times?

b. Was anything done about it?

c. How did that come out?

___8. DK/DR/no response (GO TO Q. 5)

SAMPLE

5. Has anyone from the screening clinic or social services been in touch with you about _____'s ear or hearing problem?

___1. No

___2. Yes

a. Who?

b. When was that?

c. What did they say?

___8. DK/DR/no response

[STOP, unless answer to Q. 4, Section IV is "Yes," THEN CONTINUE]

VI. Change in Previous Doctor-Patient Relationship

1. You told us earlier that _____usually went to Dr._____ for his [her] [your] regular medical care. Since seeing Dr. _____ (referral doctor), do(es) he [she] [you] still usually go to Dr._____?

___1. Yes

___2. No

a. Who do(es) _____usually go to now?

___1. Referral doctor/clinic

___2. New doctor/clinic

___3. No usual place

ATTITUDE SURVEY

This page contains sample attitude questions which you may or may not wish to ask of each respondent. They can be reworded to refer to the screening and/or treatment setting under consideration. The notation on the bottom of the form refers to the time when these questions were asked. It was felt that responses may differ if attitude questions are asked before the main part of the interview, or after the interview was completed. This problems was solved by the Michigan Evaluation Project by asking these questions *first* for half of the interviews, and *last* for the other half.

TREATMENT AT SECONDARY REFERRAL

This section is simply a repeat of Q.'s 6-12 of Section IV, but put on a separate form so that an entire package of Sections III-VI would not have to be used in cases of secondary referral. One Section VIII should be filled out for <u>each provider</u> seen for treatment of the tracer.

SAMPLE

Study Number(s)_____

PARENT/CHILD INTERVIEW FORM

ATTITUDE SURVEY

(Section VII)

VII. Opinion of the _____

1. Now that you child [your children] [you] has [have] been examined and treated, what is your opinion of_____(program under study).

2. Why do you feel that way?

3. Do you think the program should be continued?

Interviewer: Circle appropriate code:

1 Asked at beginning of interview

2 Asked at end of interview

SAMPLE

Study Number(s)_____

PARENT/CHILD INTERVIEW FORM

TREATMENT AT SECONDARY REFERRAL

(Section VIII)

6. Did you have any difficulty in getting _____ to the appointment with the doctor?

___1. No (GO TO Q. 7)

___2. Yes

a. What kind of difficulty? (e.g., child care, transportation, etc. DO NOT PROMPT)

___8. DK/DR/no response

7. Did the doctor give _____any medicine or a prescription for medicine?

___1. No (GO TO Q. 11)

___2. Yes (PROBE for medicine or prescription)

___a. Medicine (GO TO Q. 9)

___b. Prescription (GO TO Q. 8)

8. Was the prescription filled?

___1. No

a. Why wasn't the prescription filled?

GO TO Q. 11)

___2. Yes

a. Do you remember what kind of medicine it was?

___1. Yes Specify_____

(GO TO Q. 9)

___2. No (GO TO Q. 9)

___8. DK/DR/no response (GO TO Q. 9)

___8. DK/DR/no response (GO TO Q. 11)

SAMPLE

9. Did you have any problems in getting _____ to take the medicine?

___1. No (GO TO Q. 10)

___2. Yes
a. Specify any problems:

___8. DK/DR/no response (GO TO Q. 11)

10. Did _____ take the medicine as the doctor suggested? (PROBE for duration, dose, intervals)

___1. Yes

___2. No
a. Why?

___8. DK/DR/no response

11. Did the doctor recommend anything else?

___1. No (GO TO Q. 12)

___2. Yes
a. What?

___8. DK/DR/no response

12. Did anyone at the doctor's office check with you after your visit to see how _____ was getting along? For example, did they: (Check all that were done)

___1. Ask you to call them on the telephone?

___2. Call you on the telephone to check?

___3. Ask you to bring _____ back for a checkup in a certain number of days?

(IF (3) WAS ANSWERED "YES", ASK:

a. Did you go?

___1. No

___2. Yes

___8. DK/DR/no response

___4. Other (Specify)_____

___8. DK/DR/no response

FORM 3: REFERENCE SHEET

A reference sheet similar to the sample for otitis media is provided for each tracer condition in Section Three. These include medical terms which are commonly associated with a specific condition and which may be found in health provider records. General information and terms relevant to associated medical conditions are also included. In addition, information is provided about diagnostic tests to facilitate abstractors' efforts in interpreting and coding laboratory reports.

Reference sheets should be reviewed and discussed during the training period for data collectors. They should also be used for quick reference in the field, and to insure consistent use and interpretation of terminology between abstractors.

Otitis Media

Reference Sheet

A. Following are some terms which indicate abnormality of tympanic membrane(t.m.), pharynx, auditory canals, nose, cervical lymph nodes, and mastoid.

Redness

Bulging - convex(tympanic membrane); "landmarks obscured"

Perforated - hole or tear in membrane

"Blue" "dull" "full" "thick" "retracted" - opposite of bulging; landmarks especially sharp. Indication of chronic inflammation.

Hypertrophy(increase in size) of nasopharyngeal lymphoid tissue(mostly adenoid tissue). Can block eustachian tube and cause secondary otitis media.

Hyperplasia - increase in number of tissue elements (excluding tumors) whereby bulk of the organ is increased.

Edema - "a perceptible accumulation of clear, watery fluid in the tissues" - Swelling

Serous - exuding a clear watery fluid(few or no pus cells)

Purulent - containing or forming pus(leukocytes)

Desquamated - o.m. in which the outer layer of the tympanic surface, or other ear surfaces are shedding.

Tympanoplasty - operative correction of a damaged middle ear.

Mastoidectomy - hollowing out of the mastoid process by scraping away the bony partitions forming the mastoid cells. Rare since penicillin.

Auditory Ossicle - small bone; specifically any one of the bones of the middle ear(incus, malleus, stapes).

Vertigo - dizziness; giddiness; a sensation of irregular or whirling motion

Cholesteatoma - "a misnomer(because it is not a tumor) for a cystlike lesion comprised of an irregular lining of proliferating, keratinizing, stratified squamous epithelium and an associated granulomatous inflammatory reaction in a chronically infected tympanic cavity"

Cerumen - ear wax

exudate - " a fluid, often coagulable, extravasated into the tissues, or any cavity," in other words, an oozing discharge. Usually covers a lining. Usually purulent. A serous exudate is called a transudate.

erythema - "redness of skin, inflammation"

Fauces inflammation - inflammation of the area immediately adjacent to the tonsils.

Faucitis - "inflammation of the fauces"

Follicular exudate - an oozing discharge of simple tubular glands. Distributed in spots over a surface.

Granulomatous - characterized by granulation tissue

Hemorrhagenic - "causing hemorrhage"

Hypertrophic - "overgrown" enlargement

Infective

Keratinizing - becoming horny/scaly

Inflammation

Lymphadenitis - inflammation of lymph nodes

Lymphadenopathy - any pathology of lymph nodes (usually manifested by swelling)

Membrane

Obstruction of airway

Pallor

Unilateral tonsillar enlargement

Peritonsillar abscess - "extension of tonsillar infection beyond the capsule."
Synonym: lateral pharyngeal abscess.

Petechiae - "minute hemorrhagic spots, of pinpoint to pinhead size, in the skin." Larger spots called ecchymoses.

Pyogenic - "pus forming"

Red

Septic - "caused by pus forming agents."

squamous - scaly, platelike;flat

Staphylococcus - a type of bacteria

Suppurative - "forming pus" = purulent = pyogenic

Tenderness

Transudate - serous exudate, not purulent

B. Following are synonyms or indicators for the associated symptoms and conditions:

Rhinitis - inflammation of nasal mucous membrane. Coryza is rhinitis with profuse discharge.

Rhinorrhea - nasal discharge

Recurrent upper respiratory infections(URI) Upper respiratory - anything above the lungs, incl. the bronchial tubes. Thus bronchitis is URI. Pneumonia is only LRI.

Recurrent sore throat/tonsillitis/pharyngitis

Cervical adenopathy - swollen, enlarged, palpable tender cervical lymph nodes or glands(lymphadenopathy) in neck.

Facies - appearance of face [adenoid facial expression (mouth breathing), tongue often stuck out]

Otitis externa - inflammation of the auditory canals.

Information for Diagnostic Tests: HEARING TESTS:

Hearing tests - tuning fork test; Weber test; Rinne test: Schwaback test; pine tone test; pine tone average(PTA), bone conduction; air conduction; lateralization; Stenger test, Daerfler-Stewart tests (or modified); Electrodermal Response (EDR); Average Evoked Response Audiometry (AERA), Rainville audiometry; SAL audiometry; recruitment tests; Alternate binaural loudness balance test (ABLB) results in a laddergram; SISI (short-increment sensitivity index); tone decay test.

Descriptive of problems and miscellaneous - Flat audiogram, saucer audiogram; dB level, description of non-response at a designated frequency (written as 1000 Hz) Bekesy tracing (type I, II, III, etc.); conductive loss, sensorenucal loss; hyper-complete, partial, incomplete, recruitment.

Speech Audiometry - Spondee; ST (speech or spandee threshold); SRT (speech reception threshold); SERI (spandee error index) Monaural or binaural testing; CID auditory testing W-22s; Speech Stenger test; Lombard's test; Swinger (or shifting or voice) test. Delayed auditory feedback (DAF)

Audiometric screening - (equipment) Vican Apriton (for infants): Rudmase Warblet(infants)

(behavioral) Erving method, Handy, Daugheit, and Handy method Pure-tone sweep test.

Information for treatment of o.m.

Tonsillectomy - removal of entire tonsil

Adenoidectomy - operation for the removal of the adenoids

Myringotomy - incision of the tympanic membrane; paracentesis(cutting a hole in) of the drum membrane

Neonates (to 2 mos.)

Sound-makers to elicit startle response - Moro, or APR reflex should be elicited (startle, eye-blink)

Infants (2 mos - 24 mos.)

Stimuli include: bells; quiet voice; quiet, common noises

Behavior:
localize source of sound by 28 weeks

response to low intensity household
sounds (6-9 mos.) loud
sounds ignored

locate quite sounds i.e. name (9-15 mos.)

carrying out simple commands, spoken quietly (16-30 mos.)

Young children - (2-5 years)

Sweep Screen: at 500, 1000, 2000, 4000 cps normal response is $<$ + 15dB

Diagnostic Tests: Bone conduction

Rinne test (tuning forks) purpose: differentiate between conductive and sensorineural loss. Both Rinne negative and Rinne positive can be abnormal findings. Normal hearing will be Rinne positive, or may be expressed as

AC $>$ BC (= Rinne positive) (normal)
BC $>$ AC (= Rinne negative)

AC = air conduction
BC = bone conduction

May use a range of calibrated tuning forks (freqs: 128, 256, 512, 1020, 2048 cps)

Method: vibrate turning fork; hold to external ear 'til not heard; place on mastoid process. Does patient hear by BC after AC? If so, is negative; indicates conductive loss.

Weber test (tuning forks) purpose: differentiate between conductive and sensorineural loss, in unilateral loss. Tests lateralization

Results are in terms of whether patient hears tone in better or poorer ear

Method: vibrate tuning fork; place on midline of skull. If lateralizes to poorer ear, indicates conductive loss; if to better ear, indicates sensorineural loss.

Schwaback test - quantitative test of bone conduction. Reported in terms of "diminished 10" - camparing BC of patient to physician; 10 refers to seconds

Pure tone: Audiometry quantiative and qualitative test of AC. Adaptable to test BC.

500	1000	2000	4000	8000 ops
*15dB	15dB	15dB	20db	15dB

anything greater than listed dB levels for each frequency may be considered a loss, and is referrable.

Losses up to 30dB may not be treated.

Levels of loss:

20-40	dB	mild
40-60	dB	moderate
60-75	dB	severe
75-100	dB	profound

Curves may be described verbally: i.e., flat, steep, notched.

ACTIVITY 6 ANALYZE DATA AND REPORT RESULTS

Once the data have been collected from medical records and all interviews have been conducted, it is then necessary to analyze the data and report the results of the evaluation. The three objectives of the evaluation activity are: 1) analyzing the data in such a way that the results are an accurate representation of the information collected; 2) reporting the results in a way that both answers the questions posed by the evaluation, and are meaningful to readers; and 3) interpreting and drawing conclusions from the results which are useful for individuals who will use them for program planning and development.

STEP 1: Preparing Data for Analysis

The data from each case must be tabulated so that aggregate findings for the entire study population (or some subset thereof) can be determined. If the number of cases in the study is small, the data could be hand-tabulated. In most cases, however, this will not be possible, and it will be necessary to prepare the data for each case, so it can be entered into a computer file. Preparation of data for computer analysis and subsequent computer programs necessary for manipulation of data in the computer, requires a knowledge of coding, keypunching, and computer programming. If the evaluator lacks knowledge in all or some of these areas, consultation with a researcher and/or computer programmer is required.

Coding is a process whereby the answer to each question on the data collection forms is converted to a numerical symbol, and the appropriate number is recorded in a designated column on a *codesheet*. In order to do this, the data collection forms must be converted to *codebooks*, which are simply lists of each question and each possible answer. Each question is assigned one or more of the columns on a standard 80 column

codesheet, and the answers for each case are recorded via the appropriate numerical symbol.*

Keypunching is the process whereby the numbers on the codesheets are punched onto an 80 column IBM card using a keypunch machine. These cards may then be read by the computer.*

STEP 2: Data Tabulation

The ways in which the data should be tabulated are determined by the questions posed by the evaluation, and any other observations that the evaluator intuitively feels may yield interesting and useful findings. It is standard practice that frequency distributions be obtained for each item on the data collection forms. Frequency distributions are *counts* of how often each answer for a given question occurred. For some items, such as age and sex, this may be the only way the data will be tabulated and reported. For others, the distributions may suggest comparisons with other items via cross-tabulations or two-way tables. Cross-tabulations are *combined counts* of answers for two or more questions. The use of various patterns of tabulations will answer most of the questions posed by the evaluation.

Sometimes it is necessary to ask more than one question in order to get the information needed to measure a particular concept. The responses to these questions are combined to make a score, which is then the measure for that concept. Adequacy, outcome, and compliance are concepts for which this is necessary. Adequacy is measured for each section of each tracer using a series of items in the relevant section of the minimal care plans. Outcome may be measured using the items in the outcome section of the minimal care plan, and certain questions on the interview form. Compliance may be measured

*These processes are more fully described in: Warwick, D.P. and C.A. Lininger. The Sample Survey: Theory and Practice. McGraw-Hill, 1975. A review of this reference may be useful for the semi-skilled evaluator prior to any effort at tabulating the data.

by using a number of questions on the interview form. A description of which analysis method was used for constructing these measures follows.

MEASURING ADEQUACY

Measurement of the adequacy of diagnosis and treatment services provided to ambulatory patients is the principal objective of this evaluation method. Adequacy is measured by comparing what services were actually provided to those indicated as essential or recommended on the minimal care plans. Because the number and pattern of essential and recommended items varies among tracers, as well as among sections of one tracer, *adequacy is measured separately for each section of each tracer*. Several techniques for scoring and measuring adequacy are presented below.

1. Dichotomous Variable: Adequate Versus Inadequate*

The simplest method for measuring adequacy is to consider only essential items, and to score each section of the provider forms separately as adequate or inadequate. This will provide a measure of adequacy by process.

To establish measurement criteria for each section it is necessary to identify the specific pattern of codes on the provider form which is equivalent to adequate, given the requirements listed on the minimal care plan. For example, the History section of the otitis media minimal care plan indicates that the following are essential items:

a. Presenting symptoms and duration
b. Previous history of middle ear infections

The corresponding items on the otitis media provider form must be coded in the "Yes" or "No" column, for a case to be adequate.

---

*Refer to the minimal care plan for otitis media on page 89 which is used to illustrate this section.

You will recall that "Yes" means there was a history, and "No" means that there was no history, but they both indicate that the item was asked. If either or both of the items was coded "NM", then the entire section is inadequate. Remember that all of the essential items must be done in order for that section to be adequate. Later in this section there is an explanation of a scoring technique which permits the evaluator to distinguish between those cases which are inadequate even though most, but not all, of several essential items were done. Note that this measurement method includes only *essential* items. The inclusion of *recommended* items in the adequacy measurement will be discussed later.

This process must be repeated for each section on the provider form. Generally, if an item is coded in either the first or second column, then it is adequate; if coded in the third, it is inadequate. In some cases, however, the form deviates from this coding scheme. For example, in the follow-up and outcome sections, time periods are included in the adequacy measure. In these cases, it is necessary to add time parameters to the codes which are equivalent to adequacy. The sample below illustrates the adequacy pattern for otitis media.

Adequacy Pattern for Otitis Media

	Item	Code	
History	II/A/1	"Yes" or "No"	
	II/A/a	"3 Mos. or more" or "less than 3 Mos."	
	II/A/2	"Yes" or "No"	
Physical Exam	II/B/1	"Abn" or "Norm"	
Dx Process	II/B/1	"Abn" or "Norm"	
Dx Decision	II/B/1	"Abn"	
Treatment	II/E/1	"Yes"	
Follow-Up	II/F/2	"Yes" or "A*"	and "1-24 weeks"
Outcome	II/G/1	"Yes" or "No"	and "1-3 days"
	II/G/2	"Yes" or "No"	and "1-6 Mos."

You will note that for the last two items, the code includes time parameters lacking in the other items.

The Diagnosis section of the minimal care plan is somewhat different than the other sections, and requires a slightly different scoring technique. The panels of physicians who compiled the minimal care plans determined that, while several performance items were essential for diagnosis and treatment, there was one key finding on which the physician usually bases a diagnosis of the tracer condition. The determination of adequacy for diagnosis must, therefore, be based on the presence of that finding in the record. This may be done by splitting the diagnosis into its two component parts: diagnostic process and diagnostic decision. Each case is then analyzed to see if the key item was performed (diagnostic process), and if the finding for that item is appropriate for the diagnosis of the tracer (diagnostic decision). As the adequacy pattern for otitis media indicates, the physicians specified that the abnormal appearance of the tympanic membrane was the key piece of information used to make a diagnosis of otitis media. In order for a case to be adequate for diagnostic process, there must be evidence on the record that the tympanic membrane was examined. In order for a case to be adequate on diagnostic decision, there must be evidence that the tympanic membrane was examined and found to have an abnormal appearance.

Once these coding patterns are established, the *adequate* or *inadequate* score of each section in each case may be specified. It will then be possible to count the number of cases which were adequate for history-taking, physical examination, etc., for each tracer condition, and for all cases. These counts are ordinarily reported as percentages of all cases--e.g., 73% of all cases of otitis media had adequate histories.

2. Overall Adequacy

Another measurement procedure for expressing adequacy is to summarize the findings for each case across all sections. It assumes completion of the simple measure for adequacy by section as described above. This summary measure permits the evaluator to express an overall adequacy score for a given case in the study. The case-specific (rather than section-specific) scores may then be correlated with other characteristics of patients or providers in the study population. For example, you may want to examine whether there is a significant difference in overall adequacy scores between the group of patients who had one visit versus the group who had more than one visit.

Since there are eight sections for each case which may be determined to be adequate or inadequate, numerous patterns for all cases in the study will emerge. For example, one case may be adequate for history, diagnostic tests, and treatment, and inadequate for all other sections. Another case may be adequate for physical examination, treatment, and follow-up, and inadequate for all other sections. Although the cases in this example differ in their patterns of scores, their overall adequacy is the same: three adequate sections, and five inadequate sections. *For each case, it is possible to calculate the overall adequacy by dividing the total number of relevant sections possible into the number of adequate sections.*

The denominator will differ for different tracer conditions because some sections of some tracers have no essential items. It is therefore not possible to determine adequacy for those sections of cases of those tracers. Examples of patterns which could occur are:

Ad/Inad/Inad/Ad/Ad/Inad/Ad/Inad = 4/8 = 50% adequate
Ad/Ad/NA/Inad/Ad/Inad/NA/Inad = 3/6 = 50% adequate
Inad/Ad/Ad/Inad/Inad/Ad/Inad/Inad = 3/8 = 37.5% adequate
Ad/Ad/NA/Ad/Ad/Inad/Ad/NA = 5/6 = 83.3% adequate

The number of cases with a given score of overall adequacy may then be counted and expressed in a percentage distribution. Or the scores may be aggregated by such categories as "completely inadequate" (0%), "more inadequate than adequate" (50% or less), "more adequate than inadequate" (50% or more), "completely adequate" (100%). The number and percent of cases in each of these categories may then be reported.

3. Degree of Adequacy

The dichotomous variable of adequate or inadequate is useful for summarizing the performance of providers on all items deemed essential on the minimal care plans. However, it does not sufficiently describe all the information found in the records for two reasons: 1) it does not distinguish between those cases which were inadequate because *none or very few* of the essential items were done versus those inadequate cases in which *most but not all* of the essential items were done; and 2) it does not give providers any *credit for* doing those items which were *not essential* but were *recommended*. The following scoring technique can be used to construct a continuous variable of degree of adequacy.

Most sections of the minimal care plans contain certain items which were not deemed essential, but which the physician panels agreed would be recommended. An adequacy measure which includes essential and recommended items provides a continuum from zero to the total possible score, along which each case may be placed. The point on the continuum at which exactly adequate is achieved is that score which is obtained *if all*

essential items are done; all cases which fall above that point have a score which is some degree above adequate. All cases which fall below that point, but above zero, have a score which is some degree of inadequacy.

The procedure for scoring each section of each case must take into account the *difference between essential and recommended items*, so that a case which has all recommended, but not all essential items done cannot obtain a score that is equivalent to adequate. One way of doing this is to assign each essential item a weight of 1. Then all recommended items are assigned equal weights of .99 divided by the total number of recommended items in the section. $\frac{.99}{\text{number of recommended items in the section}}$

In this way, all of the recommended items will add up to less than 1. The weights of all essential items, plus recommended items, are then summed to calculate a total possible score for that section. For example, in otitis media, the history section has three essential items, which each get a weight of 1, and <u>one</u> recommended item, which gets a weight of $\frac{.99}{1}$ or .99. The sum of all items is then 3.99.

For each case then, the weight is added when the item was performed, but not added when the item was not performed. In this way, each case gets a score for each section. These scores may then be summed for all cases of that tracer, and a mean score for that section of that tracer may be calculated. In addition, each score may be divided by the total possible score for that section, the results being a <u>percent</u> of adequacy.

These three procedures for measuring adequacy will give a very detailed picture of the adequacy of care in a care setting. It is recommended that all three measures of adequacy be used in the analysis, because they reflect different, but equally valid, ways of conceptualizing a score of

adequacy of care. The dichotomous variable of adequate versus inadequate using only essential items is the most precise reflection of the intent of the minimal care plans. It shows what the level of adequacy is when care actually provided is compared to those standards of care which the physicians panels felt was minimally acceptable. The variable of overall adequacy is useful for combining adequacy scores for a specific case so that comparisons may be made between groups of patients. The continuous variable of degree of adequacy is useful because it provides a more detailed picture of the care provided, allowing the researcher to make more complex distinctions than adequate or inadequate, and to measure degree above adequacy by giving credit for recommended items.

MEASURING OUTCOME

One variable the evaluator will want to compare with adequacy is outcome of treatment. Outcome is a very difficult concept to measure because information on outcome is rarely recorded on medical records, especially for acute, episodic conditions. The next best alternative for obtaining information on outcome is to *ask the patient or parent*. Several questions on the interview form are designed to elicit this information. It is suggested that the questions in Section II, especially 1 and 2, be used as one measure of outcome. The responses to these questions may be correlated with the adequacy measures and with other variables. The expectation is that outcome should be better for adequate care than for inadequate care. In addition, it is suggested that the combined responses for questions 3 and 4 of Section V be used to construct a summary variable of "Good Outcome" versus "Bad Outcome." This is done by programming the

computer (or hand tabulating) those responses for each of several questions which are equivalent to "Good" or "Bad" and determining for each case whether the summed responses are "Good" or "Bad." Counts of good and bad outcome then may be calculated for all cases, and these correlated with adequacy.

MEASURING COMPLIANCE

Patient compliance with medical treatment is an important part of the medical care process. It may be that whether or not the patient complies with treatment is correlated with adequacy and outcome. Several questions in the interview, particularly in questions 8-12 of Section IV, are designed to elicit compliance information. The responses to these questions may be used to construct a summary of variable of compliance for each case (as was done for outcome). The results may then be correlated with outcome and adequacy.

Having developed measures for adequacy, outcome, and compliance, the next step for the evaluator is to compare adequacy, outcome, and compliance with each other and with other characteristics of the patient population.

STEP 3: Data Analysis

After the data have been completely tabulated, and new measurements and variables constructed, decisions must be made about how the data should be analyzed. This means deciding what pieces of information should be compared, and what statistical tests should be calculated to answer the questions posed by the evaluation. Decisions about how data will be analyzed are based on several criteria. The

questions which follow are designed to help the evaluator make those decisions.

1. What were the questions posed at the outset of the evaluation, and what pieces of information will answer these questions. In what form of tabulation--e.g., percentage distributions, cross tabulation--will the questions best be answered.

2. What possible relationships between or among variables are suggested by the tabulated data?

3. Which variables do not have sufficient responses or sufficient variance to use in comparisons with other variables? If the responses are almost all the same (no variance), then it is not useful to compare with other variables because all the groups will exhibit the same characteristic.

As these questions are answered, the data analysis process is begun. Essentially, the data are aggregated in such a way that inferences and interpretations may be drawn from the results. As questions are identified which the data is intended to answer, it is helpful to construct *dummy tables*. These are empty tables which have the characteristics of interest broken into appropriate categories, and combined with other characteristics. Although the cells are empty, the tables indicate how data should be aggregated. A dummy table might look like the one below, but the variables to be compared will depend upon the question for which you are seeking answers.

	MEDICAL CARE	
Patient Income	Adequate	Inadequate
8000		
8000		

Generally, the typical aggregation format necessary for answering evaluation questions are percentage distributions, cross tabulations of one or more variables, and means of adequacy scores. These, with their associated statistical tests, will be sufficient to test most hypotheses and the statistical significance of most observations. If the evaluator is unfamiliar with these types of data analysis, it is strongly suggested that consultation be sought with an experienced researcher.

STEP 4: Reporting Results

After the data are analyzed, it is necessary to prepare a report of the results of the evaluation. This step is of equal importance to all other steps in the evaluation since the way results are reported can greatly influence how useful the information is for individuals who make decisions based on the results.

Research reports generally follow a standard format. The outline below suggests a typical sequencing of information:

1. Presentation of methods used.

   This should be a summary of the methodology emphasizing those aspects of the method which particularly influence the validity of the findings, and de-emphasizing those that are standard survey research procedures.

2. Descriptive narrative of findings.

   The content of this section requires judgment on the part of the writer, since it must be decided which findings are significant enough to warrant reporting, and which should be illustrated by accompanying tables.

3. Inferences and interpretations of findings.

   This section may be integrated into the descriptive narrative, or written separately, depending how much information is being reported, and how complex are the results.

4. Conclusions and recommendations based on findings and interpretations.

   Evaluators generally have the right, and sometimes the obligation, to express opinions on how the findings may be used for future program planning and development. How extensive these are will often be governed by the familiarity and relationship of the evaluator with the program being studied.

It is worth re-emphasizing the importance of packaging the findings in a manner which maximizes simplicity and clarity. Often a report such as this will have much more specific information than is readily usable by program administrators. It is the responsibility of the evaluator to determine which information is most useful, and how it should be presented. This determination may be made by asking the program administrators what kinds of questions they need to have answered, whether they prefer tabular illustrations or narrative descriptions, or both.*

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*A good summary of the reporting process may be found in Babbie, Earl R. Survey Research Methods. Wadsworth Publishing Company, Inc., Belmont, California, 1973.

Part Three

REFERENCE MATERIALS FOR SEVEN TRACER CONDITIONS

Vaginitis
Tonsillitis
Strabismus
Iron Deficiency Anemia
Lead Poisoning
Eczema
Phimosis

SAMPLE

Otitis Media

MINIMAL CARE PLAN

History

*1. Presenting symptoms and duration
pain in ears
draining ears
fever
hearing problems

*2. Previous history of middle ear infections

3. Associated infections of respiratory tract

Physical Exam

*1. Check tympanic membrane for abnormalities
redness
bulging
perforation

2. Temperature

3. Observe pharynx for abnormality

Diagnosis

A. Acute otitis media

*a. abnormal appearance of ear drum

B. Chronic otitis media

*a. abnormal appearance of ear drum
b. history and duration (at least 3 months)

Treatment

*1. Prescribe penicillin or other anti-microbials when evidence of suppurative infection is present

2. Prescribe antihistamines for evidence of allergic rhinitis with otitis media

3. Parent education

Follow Up

*1. Re-evaluation after treatment is initiated
acute otitis media - within 2 weeks
chronic otitis media - within 6 months

2. Evaluation of hearing

Expected Outcome

A. Acute otitis media
*a. remission of acute symptoms within 48-72 hours
*b. remission of signs within 14 days

B. Chronic otitis media
*a. remission of signs within 6 months
b. normal audiometric examination within 3-6 months

*Essential item; all other items non-essential, but recommended

Study Number _____

Provider Data Summary For
VULVOVAGINITIS

I.A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

_____

2. Referral Status
   1. Initial referral from screening clinic
   2. Secondary referral from another physician
   3. Other _____
      (Specify)
   9. Unknown

3. Date of Birth _____

4. Date of Screening _____

5. Data of original appointment made at time of screening _____

B. INFORMATION FROM MEDICAL RECORDS

6. First date seen after screening _____

   _____No show

7. Total number of visits within one year from date of first visit after screening _____.

8. Previous contacts between provider and patient
   1. Has seen patient during year prior to screening for vulvovaginitis
   2. Has seen patient within past two years for vulvovaginitis
   3. Has seen patient within past two years but not for vulvovaginitis
   4. Has seen member of patient's family but not patient within past two years
   5. Has seen patient or patient's family before, but not within past two years
   6. No previous contact
   9. Unknown

NOTE: Provider = same physician <u>or</u> same record system

II. A. History

	Yes	No	NM
1. History of vaginal discharge	___	___	___
1a. If yes above, is there information on duration?	___		___
2. Other vaginal symptoms	___	___	___
3. History of previous vulvovaginitis	___	___	___
a. Prior treatment for vulvovaginitis	___	___	___
b. Response to treatment for vulvovaginitis	___	___	___

(For girls greater than 10 years)

4. History of menses (menstruation)	NA _____	___	___	___
5. History of pregnancy	NA _____	___	___	___
6. Sexual activity	NA _____	___	___	___
7. Check any of the following items (presence or absence) mentioned in the record		___	___	___

___a. Vulvar pruritis

___b. Bladder symptoms

___c. History of foreign bodies

___d. History of recent strep throat

___e. Use of antibiotics

___f. Sanitary habits

___g. Pin worms

___h. Fever

___i. Abdominal pain

___j. Use of bubble bath

___k. Relation ship of symptoms to menstrual cycle

___l. Birth control information _____
(Specify type)

B. Physical Examination

	Abn	Norm	NM
1. Examination of genitalia: labia; vulva; and vaginal mucous membranes			

Description: _____

	Yes	No	NM
2. Presence of foreign bodies			

Description: _____

	Yes	No	NM
3. Presence of discharge			

Description: _____

4. Description of discharge — Abn Norm NM
   Description: _____

5. Sexual and/or menstrual development — Abn Norm NM
   Description: _____

6. Indication of present or past pregnancies (parity) — Yes No NM
   Description: _____

7. Urethra — Abn Norm NM
   Description: _____

8. Abdominal exam — Abn Norm NM
   Description: _____

9. Bimanual rectal exam — Abn Norm NM
   Description: _____

10. Check any of the following items mentioned in the record
    ___a. Speculum exam (pelvic)
    ___b. Description of cervix

C. Diagnostic Tests — Done A* NM

1. Vaginal culture (G.C.) — ___ ___ ___
   _____
   (Copy verbatim culture information)

2. Microscopic exam for trichomonas — ___ ___ ___
   _____
   (Results)

3. Serologic test for syphilis such as VDRL — ___ ___ ___
   _____
   (Results)

ttempted

4. Check any of the following items mentioned in the record

___a. Pin worm prep

___b. Vaginal mucosal preps (or urethral exfoliates) _____
(Results)

___c. Culture for strep _____
(Results)

___d. Pregnancy test _____
(Results)

___e. Culture for monilia _____ _____
(Results)

___f. Vaginal smear for gram negative intracellular diplococci _____
(Results)

___g. KOH prep of vaginal smear for candida _____
Results)

D. Diagnostic Information (Record all diagnoses verbatim and include dates)

E. Treatment

	Yes	NM
1. Counsel to parent/patient regarding diagnosis	___	___
2. Specific treatment for etiology (e.g. TV, monilia) _____ (Specify)	___	___
3. Control of itching or scratching, local or systemic _____ (Specify)	___	___
4. If VD, report to Department of Public Health ___NA _____ (Specify)	___	___

5. Check all items below found on record

___a. Sitz baths

___b. Local irrigation with saline solution

___c. Antibacterial agents for persistent, recurrent, or severe vaginitis

F. Follow-Up

1. Does provider have routine follow-up procedure? (Ask office staff)

_____No

_____Yes: _____
(Explain)

2. Did symptoms recur or persist? _____ Yes No NM
(Specify)

3. Was patient re-examined? Yes A NM

3a. If yes, within _____(time period)

4. If diagnosis was gonococcal vulvovaginitis, were questions asked to confirm whether patient complied with recommendations to avoid carrier contacts. _____NA Yes A NM

Explain: _____

_____

G. Outcome indications

1. Remission of symptoms within _____(time period) Yes No NM

2. If GC, negative vaginal culture within _____(time period) Yes No NM

Indicate any other change of health status recorded in the record:

_____

H. Referral Status

1. Was patient referred: _____
(Name)

_____
(Organization)

_____
(Address)

REASON FOR REFERRAL _____ _____

I. Information from Site Visit

1. Provider's organizational affiliation

1. Solo private practice
2. Group private practice - single specialty
3. Group private practice - multi specialty
4. Public ambultory clinic - freestanding, e.g. M&I, C&Y Health Center, with DIFFERENT organization from screening clinic
5. Public ambulatory coinic - freestanding, e.g. PRESCAD with SAME organization as screening clinic

2. Provider's ethnicity

1. Caucasian
2. Black
3. American Indian
4. Spanish surname
5. Other _____
(Specify)
8. Unknown

III. Abstractor information

_____ Initials _____ Time to abstract _____ Date abstracted

Remarks:

_____Attachment

PARENT/CHILD INTERVIEW

VAGINITIS

The sample interview contained in Part Two may be used for all tracers, with the following adaptations for vaginitis.

Vernacular terms: vaginal infection
vaginal inflammation
discharge from genitalia or privates

Part III, Q. 2:
1. discharge
2. inflammation, itching
3. burning, pain

Part IV, Q. 11:
1. sitz baths
2. suppositories
3. douching, washing, irrigation
4. refrain from intercourse

Vulvovaginitis

Reference Sheet

I. General Terminology

Estrogenic epithelium — The cellular, avascular layer covering the vaginal surfaces, which is subject to alteration in certain circumstances.

II. History

A. History of vaginal discharge:

Leukorrhea = "A discharge from the vagina of a white or yellowish, more or less viscid fluid, containing mucous and pus cells."

Purulent discharge = Discharge containing pus

Serosanguineous discharge = Bloody discharge

Other terms which may be used to describe vaginal discharges are = Dirty yellow, foamy, copious

Menarche = Age of onset of menstruation

B. Other vaginal symptoms:

itching, redness, swelling, burning, pain, painful intercourse(coitus)

Pruritis = "Itching"

Dyspareunia = Painful intercourse

Erythema = Redness

C. History of previous vulvovaginitis

Previous inflammation or infection of the vulva, mucous membrane(m.m.) or vagina

D. Synonyms for other items found in history:

Vulvar pruritis = Itching of the vulva

Bladder symptoms = Pain, burning, frequency, nighttime urination difficulty.

Menstrual abnormalit s:

Amenorrhea = Absence of menses

Dysmenorrhea = Painful menses

Metrorrhagia = Excessive menses

Menorrhagia = Too little, scanty menses

Use of antibiotics = Penicillin, etc.

Sanitary habits = Personal hygiene

Abdominal pain = Belly ache, cramps

III. Physical Examination

A. Examination of genitalia: Labial, vulvar and vaginal mucous membranes:

Swollen, red, hemorrhagic, edematous, scarred, labia majora, labia minora

B. Nulliparous = The condition of having borne no children

C. Description of urethra:

Edema, puffiness, discharging, pouting, inflamed urethral orifice

D. Speculum exam:

Speculum = Metal instrument for opening and visualizing a body orifice

E. Exam for excoriations of labia and skin of thighs:

Perineum = "The area between the thighs extending from the coccyx to the pubis and lying below the pelvic diaphragm"

Excoriations = scratches, abrasions, scrapings

F. Pelvic examination = Examination of external female genitalia(labia, vulva and vaginal mucous membrane) and the reproductive organs through the vagina. This generally includes speculum exam. of cervic and bimanual rectal exam.

IV. Diagnostic Tests

A. Vaginal culture

Cultures: Gonococci,
Pneumococci,
Streptococci,
Staphylococci,
Proteus ammoniae,
and Shigella

B. VDRL

VDRL = Venereal Disease Research Laboratories
It is a serologic(blood) test for syphilis. Other tests for syphilis are listed on the following page.

Tests for Syphilis (Continued)

Bauer's t.
benzoin t.
Boerner-Lucken's t.
Bruck's serochemical t.
Busacca's t.
Cantani t.
Casilli's t.
Chediak's t.
Clive's t.
Craig's t.
Cutting's t.
Eagle t.
filter paper microscopic t.
Garriga's t.
gel t.
Hecht's t.
Hecht-Weinberg-Gradwohl t.
Hennebert's t.
Hinton t.
Ide t.
Ishihara's t.
Jacobsthal's t.
Justus' t.
Kafka's t.
Kahn t.
Klausner's t.
Kline t.
Kolmer's t.
Landau color t.
Lange's t.
Laughlen t.
Mastic t.
Mazzini t.
Meinicke t.
Michaelides' t.
Müller's t.
Murata t.
Peterman's t.
Porges-Meier t.
Porges-Salomon t.
Ross's t.
Rytz t.
Sachs-Georgi t.
Sachs-Witebsky t.
Schürmann's t.
Stern's t.
Takata-Ara t.
Tschernogowbou's t.
Ucko's t.
Verner's t.
von Dungern's t.
Weil's t.

Fornet's reaction
Jarisch-Herxheimer r.
Klausner's r.
Noguchi's r.
Noguchi's luetin r.
Pallidin r.
Perutz's r.
Targowla r.
Wassermann r.

C. Synonyms relating to other diagnostic tests

Wet preparation of vaginal discharge	= Wet prep
Cervical G. C. culture	= Culture for gonococci from cervix
Serology	= Test of blood serum, usually for syphilis
Culture for monilia	= Moniliasis, yeast infection
KOH prep	= Potassium hydroxide prep.
Candida	= Candidiasis or candidas

D. Pregnancy tests

Aschheim - Zondeh t.
Bercovitz t.
Bitterling t.
Bromine t.
Brouha t.
Brown's t.
Cubani's t.
Dienst t.
Douell t.
Eberson's t.
Falls' t.
Frank and Goldberger t.
Frank and Northmann's t.
Friedman's t.
Galli Marnini t.
Gurskin t.
Guterman t.
Histidine t.
Kamnitzer's t.
Kapeller - Adler t.
Kintsi - Malone t.
Konsuloff's t.
Kustallar's t.
Linzenmeier's t.
Manciloff's t.
Muck's t.
Porges - Pollatschek t.
Prostigmine t.
Renton's t.
Schneider t.
Venning Browne t.
Visscher - Bowman t.
Voge's t.
von Pall's t.
Weisman's t.
Wilson's t.
Xenopus t.
Ovarian Hyperemia

From U-M Hospital Lab.:
- Urinary Chorionic Gonadotropin(UCG)

From Student Health Service:
- Human Chorionic Gonadotropin(HCG)

Vulvovaginitis

Minimal Care Plan

EVALUATION

A. History

*1. Description of vaginal discharge
2. Duration of vaginal discharge
3. Other vaginal symptoms
4. Sexual activity/exposure
5. History of previous vulvovaginitis, prior treatment and response
6. Pregnancy, menses (if > 10 years)

B. Physical Exam

*1. Check for foreign bodies
*2. Examine genitalia, including labia and mucous membranes
3. Description of type of discharge
4. Examine abdomen, uretha
5. Rectal bimanual exam

DIAGNOSTIC TESTS

*1. Vaginal culture if purulent discharge beyond puberty (age 8 and >)
2. Vaginal smear for trichomoniasis, if discharge copius and frothy
3. VDRL if sexually active

DIAGNOSIS

*1. Physical evidence of inflammation with or without discharge
2. History of symptoms suggesting vulvovaginal problems

MANAGEMENT

A. Treatment

*1. Counseling parent/patient about diagnosis
*2. Specific treatment for etiology
3. Control of itching or scratching; local or systemic
4. If VD, report to Department of Public Health

B. Follow-Up

*1. Re-examination in 1-2 weeks if symptoms recur or persist
2. If VD, re-examine in 10 days

EXPECTED OUTCOME

1. Remission of symptoms, within 14 days (including trichomonas)
2. If gc culture positive, negative vaginal culture within 14 days

REFERRAL

1. To Gynecologist for young children primarily for examination or treatment requiring instruments

*Essential item; all other items non-essential but recommended

Study Number_____

Provider Data Summary For
TONSILLITIS/PHARYNGITIS/STREP THROAT

A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

_____

2. Referral status
   1. Initial referral from screening clinic
   2. Secondary referral from another physician
   3. Other _____
      (Specify)
   9. Unknown

3. Date of Birth _____

4. Date of screening _____

5. Date of original appointment made at time of screening _____

B. INFORMATION FROM MEDICAL RECORDS

6. First date seen after screening _____

   _____No show

7. Total number of visits within one year from date of first visit after screening _____.
   a. Number of visits related to tonsillitis _____

8. Previous contacts between provider and patient
   1. Has seen patient during year prior to screening for tonsillitis
   2. Has seen patient within past two years for tonsillitis
   3. Has seen patient within past two years but not for tonsillitis
   4. Has seen member of patient's family but not patient within past two years
   5. Has seen patient or patient's family before, but not within past two years
   6. No previous contact
   7. Unknown

NOTE: Provider = same physician <u>or</u> same record system

	Yes	No	NM
I. A. History			
1. History of previous fever	___	___	___
2. History of previous sore throat	___	___	___
3. History of recurring episodes of tonsillitis	___	___	___
3a. If yes, how many episodes within past _____(time period) _____			___
4. History of recurring episodes of ear infection	___	___	___
4a. If yes, how many episodes within past _____(time period) _____			___

5. Check any items below mentioned in the history:

___a. Headaches
___b. Coryza
___c. Cough
___d. Malaise
___e. Exposure to streptococcal infection
___f. Rash
___g. Age
___h. Tonsillectomy/adenoidectomy
___i. Sore or swollen cervical glands
___j. Mouth breathing
___k. Abdominal pain

B. Physical Examination

1. Examination of pharynx _____ _____ (Specify)	Abn	Norm	NM
2. Examination of tonsils _____ _____ (Specify)	Abn	Norm	NM
3. Examination of Uvula _____ _____ (Specify)	Abn	Norm	NM
4. Ulcers of the anterior tonsillar pillar _____ (Specify)	Yes	No	NM
5. Vesicular lesions _____ (Specify)	Yes	No	NM
6. Examination of palate _____ (Specify)	Abn	Norm	NM
6a. Are there petechiae? _____	Yes	No	NM

7. Temperature (Abn = > 99.6) _____ (Specify) — Abn Norm NM

8. Rhinitis/rhinorrhea _____ (Specify) — Yes No NM

9. General physical examination — ___ ___ ___

10. Check below all items mentioned on the record

___a. Skin rash

___b. Cervical adenopathy

___c. Blood pressure

___d. Heart

___e. Ears

___f. Abdominal examination

___g. Chest

C. Diagnostic Tests

1. Throat culture (check which below) — Done A* NM

_ Beta-hemolytic streptococci and/or group A streptococci _____ (Results)

_ Pfeiffer's Bacillus _____ (Results)

_ H influenzae: stapholococci, or pneumococci _____ (Results)

_ Other _____ (Specify with results)

2. Check any items below mentioned in record:

___a. Blood count _____ (Results)

___b. Urinalysis _____ (Results)

___c. Heterophile antibody, (HA or HAb) _____ (Results)

___d. Spot test or EBV for infectious mononucleosis _____ (Results)

___e. ASO titer _____ (Results)

D. Diagnostic Information (Record all diagnoses verbatim and include dates)

*Attempted

E. Treatment

	Yes	No	NM
1. Prescription of penicillin (indicate if allergic)	___		___
_____ (Specify type, dose, and duration)			
2. Prescription of erythromycin	___		___
_____ (Specify type, dose, and duration)			
3. Liquids, fluids by mouth, (water, ginger ale, etc.)	___		___
_____ (Specify)			
4. Prescription of analgesics	___		___
_____ (Specify type, dose, and duration)			
5. Tonsillectomy	___		___
_____ (Specify date, physician, and hospital)			
6. Adenoidectomy	___		___
_____ (Specify date, physician, and hospital)			

7. Check if any items below found in record:

___a. Limitation of activity

___b. Steroids, Cortisone, cortico-steroids, Prednisone, etc.

___c. Prescription of Clindamycin (Cleocin)

___d. Other _____ (Specify)

F. Follow-Up

1. Does provider have routine follow-up procedure? (Ask office staff)

___No

___Yes: _____ (Explain)

	Yes	A	NM
2. Communication with patient regarding status			
_____ (Specify)			
3. Check for associated conditions (allergy, serous otitis media)	Yes	A	NM
_____ (Specify)			

4. Check if done:

___a. Throat culture repeated _____
(Specify results and date)

___b. Urinalysis repeated _____
(Specify results and date)

___c. Hearing monitored _____
(Specify tests done, results, and date)

___d. O.T. tests done _____
(Specify and give date)

___e. Return visit suggested: how long? _____

G. Outcome Indications

1. Diminution of acute symptoms Yes No NM

_____
(Record remark verbatim including specific symptoms and time periods)

Indicate any other change of health status recorded in the record:

_____

H. Referral Status Yes No NM

1. Was patient referred:
If yes, specify to whom: _____
(Name)

_____
(Organization)

_____
(Address)

REASON FOR REFERRAL _____

I. Information from Site Visit

1. Provider's organizational affiliation

1. Solo private practice
2. Group private practice - single specialty
3. Group private practice - multi specialty
4. Public ambultory clinic - freestanding, e.g. M&I, C&Y Health Center, with DIFFERENT organization from screening clinic
5. Public ambulatory clinic - freestanding, e.g. PRESCAD with SAME organization as screening clinic

2. Provider's ethnicity

1. Caucasian
2. Black
3. American Indian
4. Spanish surname
5. Other _____
(Specify)
8. Unknown

Abstractor information

_____ Initials _____ Time to abstract _____ Date abstracted

Remarks:

_____ Attachment

PARENT/CHILD INTERVIEW

TONSILLITIS

The sample interview contained in Part Two may be used for all tracers, with the following adaptations for tonsillitis.

Vernacular term: sore throat

Part III, Q. 2:

1. sore throat
2. frequent colds; colds seem to "settle in" throat
3. frequent throat clearing or coughing

Part IV, Q. 11:

1. fluids
2. tonsillectomy or adenoidectomy
3. more rest

Tonsillitis

Reference Sheet

A. The following are some of the terms which indicate abnormality of pharynx, tonsils, uvula, and palate upon physical examination.

Adenitis - "inflammation of a lymph node or gland"

Edema - "a perceptible accumulation of excessive clear watery fluid in the tissues", in other words, swelling

Enanthem - an eruption upon a mucous surface

Erythema - "redness of skin; inflammation"

Exudate - "a fluid, often coagulable, extravasated into the tissues or covering them, or any cavity," in other words, an oozing discharge. Usually purulent

Fauces inflammation - inflammation of the area immediately adjacent to the tonsils.

Faucitis - "inflammation of the fauces"

Follicular exudate - an oozing discharge of a simple tubular gland(follicle)

Hemorrhagenic - "causing hemorrhage"

Hyperplastic - "an increase in the number of the individual tissue elements, excluding tumor formation, whereby the bulk of the part or organ is increased"

Hypertrophic - "overgrown"

Infective

Inflammation

Membrane

Obstruction of airway

Pallor

Peritonsillar abscess(lateral pharyngeal abscess) - "extension of tonsillar infection beyond the capsule"

Petechiae - "minute hemorrhagic spots, of pinpoint to pinhead size, in the skin

Pyogenic - "pus forming"

Red

Septic - "caused by pus forming agents"

"small nubbins of lymphoid tissue"

Staphylococcal - a type of bacteria

Suppurative - "forming pus"

Tenderness

Ulcerative/Ulcerations

Vesicular lesions - lesions of a "small circumscribed elevation on the skin, containing serum"(water blisters)

Viral

B. The following are synonyms or indicators for the associated symptoms and conditions found in B.8-9 and C.2:

Rhinitis: swelling of nasal mucous membrane, erythema of nasal mucous membrane. Coryza is rhinitis with copious discharge

Rhinorrhea-nasal discharge

Skin rash: impetigo, dermatitis, and many others

Cervical adenopathy: swollen, enlarged, palpable tender cervical lymph nodes or glands

Blood pressure: hypertension

Heart: murmurs, irregularities, enlargement

Ears: discharge, red bulging tympanic membrane or ear drums

Abdominal examination: organomegaly, inguinal groin node, enlarged spleen(splenomegaly), enlarged liver(hepatomegaly), abdominal masses, tenderness, rigidity of abdominal muscles - sign of appendicitis

LKS: Liver kidney & spleen

RLQ: Right lower quadrant(for appendicitis)

Chest: rales(crackling), rhonchi(coarse rales), dulness(decreased resonance), abnormal breath sounds, bronchial breathing, bronchial vesicular breath sounds(fine rustling sounds), tubular breathing, lung auscultation, pulmonary auscultation,

Blood count(CBS): blood smear, differential(counts types of white cells), shift to the left(in blood differential-excess of non-segmented white cells. Indicates infection), neutrophilia(excess of neutrophils), polychromasia(different shades of RBC's because excessive demand for blood has caused release of immature RBC's), segmented polymorphonuclear, leukocytosis, leukopenia

Urinalysis: albuminuria = proteinuria, hematuria, RBC's, WBC, red cells, white cells, pyuria, pus

Heterophile antibody: (HA or HAb) Serologic test for mononucleosis

Spot test or EBV for infectious mononucleosis: (filter paper test, chemical test)

ASO titer: Antistreptolysin O titer. Serologic test, non-specific, for streptococcus.

Tuberculin tests: O.T. test, Tine tests, Tuberculo-protein(protein of tubercle bacillus), purified protein derivative

C. Synonyms for tonsillitis are considered to be: tonsillo-pharyngitis, pharyngitis, sore throat, hypertrophy of tonsils. These may be preceded by specifications such as viral, bacterial, acute, recurrent, chronic, streptococcal

D. Related conditions indicating possible tonsillitis are: peritonsillar abscess, lateral pharyngeal abscess.

Tonsillitis

Minimal Care Plan

EVALUATION

A. History

1. Previous or associated occurrence of:
   - fever
   - sore throat
2. Number of recurring episodes of tonsillopharyngitis
3. Number of recurring episodes of otitis media

B. Physical Exam

*1. Examination of pharnyx, tonsils, uvula, palate
2. Temperature
3. Check for rhinitis/rhinorrhea
4. General physical examination

DIAGNOSTIC TESTS

*1. Throat culture

DIAGNOSIS

Bacterial tonsillopharyngitis:

*1. Beta-hemolytic Streptococci or H influenzae in some cases
2. Inflamation of tonsils and pharnyx, or typical appearance such as petechiae on palate, follicular exudate, erythema

Viral tonsillitis:

*1. Tonsillo-pharyngitis with negative strep culture
2. Anterior pillar ulcers <u>or</u>
3. Vesicular lesions

Recurrent/chronic tonsillitis:

*1. Medically documented history of previous tonsillitis

MANAGEMENT

A. Treatment for tonsillopharyngitis:

Bacterial: (Including streptococcus, pneumonococcus, and H influenzae)

*1. Prescribe penicillin for 10 days

a. Benzathine penicillin or

b. oral penicillin

*2. Erythromycin for 10 days, if allergic to penicillin

Viral:

1. Analgesics
2. Liquids

Recurrent:

*1. Tonsillectomy and adenoidectomy if 4 or more episodes in one year
2. Monitor for associated conditions such as allergies, otitis media

B. Follow-up for acute tonsillitis

1. Communicate with parent regarding improvement

EXPECTED OUTCOME OF TREATMENT FOR ACUTE TONSILLITIS

1. Reduction of acute symptoms in bacterial tonsillopharyngitis within 48 hours
2. Reduction of acute symptoms in viral tonsillopharyngitis within one week

*Essential item; all other items non-essential but recommended

Study Number _____

Provider Data Summary For
STRABISMUS

A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

_____

2. Referral status

1. Initial referral from screening clinic

2. Secondary referral from another physician

3. Other _____
(Specify)

9 Unknown

3. Date of Birth _____

4. Date of screening _____

5. Date of original appointment made at time of screening _____

B. INFORMATION FROM MEDICAL RECORDS

6. First date seen after screening _____
_____No show

7. Total number of visits within one year from date of first visit after screening _____.

a. Number of visits related to strabismus _____

8. Previous contacts between provider and patient

1. Has seen patient during year prior to screening for strabismus

2. Has seen patient within past two years for strabismus

3. Has seen patient within past two years but not for strabismus

4. Has seen member of patient's family but not patient within past two years

5. Has seen patient or patient's family before, but not within past two year

6. No previous contact

9. Unknown

NOTE: Provider = same physician <u>or</u> same record system

II. A. History

	Yes	No	NM
1. Description and history of pattern of deviation	___	___	___
(Description) _____			
2. Age at onset _____ months/years	___		___
3. Maternal health perinatally	___		___
(Description _____			
4. Birthweight _____lbs _____ozs or _____gms	___		___

5. Check any items below mentioned in the record:

___a. Family history

___b. Visual acuity (past)

B. Physical Examination

1. Check for deviation	Pres	Abs	NM
(Description) _____			
2. Check for extra ocular movements	Abn	Norm	NM
_____			
3. Check for vision abnormalities such as fusion and visual acuity	Pres	Abs	NM
(Description) _____			
4. Funduscope examination	Yes	No	NM
(Description) _____			
5. Cycloplegic refraction	Yes	No	NM
(Description) _____			

C. Diagnostic Tests

Check if done:

___a. Screen test

___b. Cover test

SPECIFY RESULTS:

D. Diagnostic Information (Record all diagnoses verbatim and include dates)

E. Treatment

	Yes	No	NM
1. Parent/patient education	___	___	___
_____ (Specify)			
2. Was there an attempt to overcome by occlusion therapy?	___	___	___
_____ (Specify--describe extent of effort)			
3. Were glasses prescribed?	___	___	___
_____ (Specify)			
4. Were orthopthics and/or pleoptics prescribed?	___	___	___
_____ (Specify)			
5. Surgical correction	___	___	___
_____ (Specify)			
_____			
5a. Indicate if accomodative esotropia	___	___	___

F. Follow-Up

1. Does provider have routine follow-up procedure? (Ask office staff)

_____ No

_____ Yes: _____ (Explain)

	Yes	A*	NM
2. Was patient re-examined			
_____ (Specify)			
_____			
1a. Within _____ (time period)			
3. Was a yearly check-up done	Yes	A	NM

*Attempted

G. Outcome Indications

	Yes	No	NM
1. Was improvement noted?	___	___	___

_____
(Specify)

_____

1a. Within _____(time period)

Indicate any other change in health status recorded in the record:

_____

_____

H. Referral Status

	Yes	No	NM
1. Was patient referred:			

If yes, specify: _____
(Specify)

_____
(Organization)

_____
(Address)

REASON FOR REFERRAL _____

I. Information from Site Visit

1. Provider's organizational affiliation
   1. Solo private practice
   2. Group private practice - single specialty
   3. Group private practice - multi specialty
   4. Public ambulatory clinic - freestanding. e.g.M&I, C&Y Health Center, with DIFFERENT organization from screening clinic
   5. Public ambulatory clinic - freestanding. e.g.PRESCAD with SAME organization as screening clinic

2. Provider's ethnicity
   1. Caucasian
   2. Black
   3. American Indian
   4. Spanish surname
   5. Other _____ (Specify)
   8. Unknown

III. Abstractor information

_____Initials _____Time to abstract _____Date abstracted

Remarks:

_____Attachment

PARENT/CHILD INTERVIEW

STRABISMUS

The sample interview contained in Part Two may be used for all tracers, with the following adaptations for strabismus.

Vernacular terms: weak eyes
cross eyes

Part III, Q. 2:
1. eyes turn in or out, up or down or crossed
2. weak eyes
3. vision problems

Part IV, Q. 11:
1. glasses
2. patch
3. exercises
4. surgery

OMIT Q.'s 7-10, Part IV

Strabismus

Reference Sheet

I. GENERAL

Descriptions of eye diagnoses

O.D. - Right eye
O.S. - Left eye
O.U. - Both eye

Strabismus

All suffixes of phoria (effort must be exerted to maintain eye fusion)

and tropia (actual manifestation of visual deviation)

These include:

esophoria, esotropia — Convergent strabismus

exophoria, exotropia — Divergent strabismus

hyperphoria, hypertropia — Vertical strabismus

cyclophoria, heterophia, heterotropia — other and unspecified strabismus

Amblyopia - dimness of vision without detectable organic lesion caused by strabismus

Refractive errors not strabismus:

1. Hyperopia = farsightedness
2. Myopia = nearsightedness
3. Astigmatism = differing refractive power of the cornea

Inflammatory diseases of the eye <u>not</u> strabismus

4. Conjunctivitis and ophthalmia = inflammation of anteria mucous membrane covering eyeball

5. Blepharitis = inflammation of eyelid

6. Hordeolum = abscess or stye of eyelid

7. Keratitis = inflammation of the cornea

8. Iritis = inflammation of the iris

9. Choroiditis = inflammation of the middle coat(choroid)of the eyeball

II. INFORMATION FROM HISTORY AND PHYSICAL EXAM

1. Maternal health perinatally = health of the mother from 20-28 weeks gestation to 1-4 weeks after delivery.

2. Deviation - should be specified as present or absent. Perhaps a description such as convergent, divergent or vertical will also be noted.

3. Extraocular Movements (E.O.M.) - these would be noted normal or abnormal

4. Vision abnormalities of fusion or visual acuity would include errors of refraction such as hyperopia, myopia, or astigmatism.

5. Funduscopic examination - this is done with an ophthalmoscope to reveal whether the fundi are normal, whether discs are present or choked, whether the retinal vessels are normal, whether exudates are present.

6. Cycloplegic refraction - normal or abnormal - This is the refraction checked after dilation of the pupil gtts - drops

III. TEST FOR MUSCLE BALANCE

A. Cover test

B. Maddox Rod test

STRABISMUS EXAM

DEVIATION

normal - orthophoric
E - esophoria
ET - esotropia
X - exophoria
XT - exotropia
HT - hypertropia

-phoria - occurs sometimes
-tropia - occurs all times
OD - right eye
OS - left eye
OU - both eyes

Alternating Esotropia - both eyes exhibit deviation at different times or under different conditions as with the cover/uncover or screening test. Either eye fixes.

Accomodative Esotropia - depends upon the relation between convergence and accommodation. Usually requires glasses.

Amblyopia - lazy eye. (as disuse) Visual acuity loss without detectable organic lesion. Caused by strabismus.

EYE EXAM

VA or V^{rt}_{lt} - visual acuity.
cc - with correction
sc - without correction

J reading chart. Subscript 0-14 designates size of letters (increasing size with numerical increment).

E game - for small children. Pointing to the direction the E is faced.

CF - count fingers. Patient couldn't see chart.

F&F - fixes and follows.

PR - pupil reacting. Usually D+C (direct and consensually)

NPC - near point convergence. Finger to nose - refers to refration.
normal - close, near, nose, etc.
abnormal - remote, far, etc.

EOM - extra ocular motion. Normal - full.

SLE - slit light exam (internal eye exam). Eye parts mentioned: C - cornea, AC - anterior chamber, I - iris.

FUNDUSCOPIC EXAM

Examination of posterior eyeball. Two methods used; Direct and Indirect. Parts of eye examined: disc, macula, peripheral retina, fundi.

CYCLOPLEGIC REFRACTION

Also Retinoscopy RT or Streak exam. May use drugs - Atropine A or A_1
Cyclopine 1%

FUSION TESTS

Titmus stereo - uses polaroid glasses to produce 3-D image. Usually fly or animals

Worth 4 Dot test - measures fusion and suppression. Results seen as no. correct/total tested.

Fusional Amplitude - prism test to measure strength of eye muscles.

COVER TEST

Also Cover/Uncover or Screening test. Seen as clock face with E-eso or X-exo at center. Suprascript ' after E or X indicates exam done close or near. △ indicates prism units of measure - diopter.

EYE MUSCLES

Six muscles in each eye.
Superior Oblique - SO
Inferior Oblique - IO
Superior Rectus - SR
Inferior Rectus - IR
Lateral Rectus - LR
Medial Rectus - MR

OA - over action
EUA - exam under anesthesia

Strabismus related eye surgeries:
R&R - recession and resection
Tendonectomy
Myectomy

ADDITIONAL DESCRIPTIONS

Abduction - turning out
Adduction - turning in
V pattern - eyes turn in when looking down
eyes turn out when looking up.
A pattern - eyes turn out when looking down
eyes turn in when lookeng up.

GLAUCOMA TESTS

T_{AP} - also T_S or T

FT - finger test

Strabismus

Minimal Care Plan

EVALUATION

A. History

*1. Description and history of pattern of deviation

*2. Age of onset

*3. Maternal health perinatally

*4. Birthweight

B. Physical Exam

*1. Check for deviation

*2. Check for extra ocular movements

*3. Check for vision abnormalities
   a. fusion
   b. visual acuity

*4. Funduscopic examination

*5. Cycloplegic refraction

DIAGNOSIS

*1. Deviation of one or both eyes when fixing on an object

*2. Inability to follow in all ranges with both eyes

MANAGEMENT

A. Treatment

*1. Patient/parent education

*2. Glasses, if refractive error or if indicated

*3. Myotics, only for esotropia

*4. Orthoptics, only for exotropia; includes occlusion therapy when indicated

*5. Surgical correction, when indicated; not indicated in accomodative esotropia

B. Follow Up

*1. Re-examination within at least 12 months, depending on nature of deviation

*2. Yearly checks if surgically or medically straightened until age 18

EXPECTED OUTCOME

*1. Improved strabismus within 3 months for accomodative esotropia without suppression

*2. Corrected strabismus may not be noted for several years, even if surgical correction is attempted.

*Essential item; all other items non-essential but recommended

Study Number _____

Provider Data Summary For
IRON DEFICIENCY ANEMIA

A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

_____

2. Referral status

   1. Initial referral from screening clinic

   2. Secondary referral from another physcian

   3. Other _____
      (Specify)

   9. Unknown

3. Date of Birth _____

4. Date of screening _____

5. Date of original appointment made at time of screening _____

B. INFORMATION FROM MEDICAL RECORDS

6. First date seen after screening _____
   _____No show

7. Total number of visits within one year from date of first visit after screening _____.

   a. Number of visits related to iron deficiency anemia _____

8. Previous contacts between provider and patient

   1. Has seen patient during year prior to screening for iron deficiency anemia

   2. Has seen patient within past two years for iron deficiency anemia

   3. Has seen patient within past two years but not for iron deficiency anemia

   4. Has seen member of patient's family but not patient within past two years

   5. Has seen patient or patient's family before, but not within past two years

   6. No previous contact

   9. Unknown

NOTE: Provider = same physician <u>or</u> same record system

II. A. History	Yes	No	NM
1. General diet and/or milk intake; (vol./day and type specified?) _____	___		___
2. Age _____	___		___
3. Birth weight ____ lbs. ____ozs. ____gms.	___		___
4. History of abnormal stools	___	___	___
5. Check any of the following mentioned on record:			
___a. Family history of anemia and/or hemophilia			
___b. Blood loss			
___c. Description of present environment			
___d. Age of mother			
___e. Parity of mother			
___f. Twins			
___g. Jaundice in newborn period			
___h. History of living in South			

B. Physical Examination		
1. Routine physical exam specify findings: _____	___	___
2. Check any of the following mentioned on record:		
___a. Check for jaundice		
___b. Cardiac exam		
___c. Palpate liver and spleen		
___d. Check skin for pallor		
___e. Color of mucous membrane		
___f. Rectal exam		

C. Diagnostic Tests	Done	A*	NM
1. Hematocrit Results: Hct _____ vol%	___	___	___
2. Hemoglobin Results: Hb _____ gm%	___	___	___
3. Peripheral blood film examination Results: _____	___	___	___
4. Serum iron Results: _____ mg%	___	___	___

*Attempted

	Done	A	NM
5. Iron-binding capacity Results: _____	___	___	___
6. Sickle cell test (if patient is Black) Results: _____	___	___	___
7. Check any of the following tests done:			
___a. stool examination for occult blood Results: _____			
___b. Urinalysis Results: _____			
___c. Retic count Results: _____ %			

D. Diagnostic Information (Record all diagnoses verbatim with date(s)

E. Treatment	Yes	NM
1. Iron (ferrous sulfate, glucomate, or fumarate) prescribed? Detail: _____	___	___
2. Parent education for diet? (e.g., increase intake of iron containing foods) _____ (Specify diet recommendations)	___	___
3. Check if following appears on the record: ___a. Imferon prescribed		

F. Follow-Up	Yes	A	NM
1. Was Hct and/or Hb tests repeated: If yes, indicate when: within _____(time period)	___	___	___
2. Was patient re-evaluated (e.g. mention of a repeated Hx, Px, Hb electrophoresis, stool exam)	___	___	___
3. Retic count repeated after _____ days on Fe	___	___	___

G. Outcome Indications NM

1. Hct value = _____ vol % within____(time period) __

2. Hb value _____gm % within_____(time period) __

3. Peripheral blood film exam findings = _____ within _____(time period) __

4. Iron binding capacity test results = _____ mg % within _____(time period) __

5. Stool examination for occult blood shows _____ within _____(time period) __

6. Urinalysis test results are _____ within _____(time period) __

7. Retic count = _____ within _____(time period)

Indicate any other change in health status that appears on the record: _____

H. Referral Status

1. Was patient referred: Yes No NM

If yes, specify: _____
(Specify)

_____
(Organization)

_____
(Address)

REASON FOR REFERRAL _____

I. Information from Site Visit

1. Provider's organizational affiliation

1. Solo private practice
2. Group private practice - single specialty
3. Group private practice - multi specialty
4. Public ambulatory clinic - freestanding, e.g. M&I, C&Y Health Center, with DIFFERENT organization from screening clinic
5. Public ambulatory clinic - freestanding, e.g. PRESCAD with SAME organization as screening clinic

2. Provider's ethnicity

   1. Caucasian
   2. Black
   3. American Indian
   4. Spanish surname
   5. Other _____ (Specify)
   8. Unknown

III. Abstractor Information

_____ Initials _____ Time to abstract _____ date abstracted

Remarks:

_____ Attachment

PARENT/CHILD INTERVIEW

IRON DEFICIENCY ANEMIA

The sample interview contained in Part Two may be used for all tracers, with the following adaptations for iron deficiency anemia.

Vernacular terms: anemia
weak blood
low blood

Part III, Q. 2:
1. pale
2. poor appetite
3. tired
4. listless

Part IV, Q. 11:
1. change eating patterns (diet)
2. change bed time

Iron Deficiency Anemia

Reference Sheet

I. Other names for Iron Deficiency Anemia are Hypochromic Anemia, Microcytic Hypochromic-Anemia, or Sideropenic Anemia, (Chlorosis)

II. Terms related in general to blood conditions:

1. Erythrocyte	=	Red blood cell (RBC)
2. Leukocyte	=	White blood cell
3. Normoblast	=	A nucleated RBC, the immediate precursor a normal erythrocyte
4. Hemoglobic (Hb) or (Hgb)	=	The iron-containing protein of red blood cells that transports oxygen and CO_2
5. Cytoplasm	=	Protoplasm, the cell substance exclusive of nucleus and particles
6. Spleen	=	A blood forming organ located in the abdomen under the diaphragm (if there is blood pathology, this could be palpably enlarged)
7. Megakaryocyte	=	An unusally large cell

III. Certain causes of IDA Could Be:

Occult bleeding	=	Hidden or concealed bleeding; hemorrhage
Peptic ulcer	=	Stomach or duodenal ulcer
most common: Meckel's diverticulum	=	A pouch-like opening from the gut which may simulate appendicitis when inflamed.
most common: Polyp(rectal or intestinal)	=	A protruding growth from mucous membrane
Hemangioma	=	A tumor of blood vessels
Hookworm infestation		

IV. Possible conditions to be found in history or physical exam:

Low birth weight	=	<5 1/2 lbs or <2500 gms and/or "premature"
Abnormal stools	=	Melena, blood in stools (black and tarry or bloody)
Gastrointestinal intolerance to whole cow's milk	=	Lactose intolerance
Gastrointestinal bleeding	=	
Anorexia	=	Loss of appetite
Tachycardia	=	Abnormally rapid beating of the heart
Cardiac dilation, Cardiac hepertrophy	=	Enlarged heart
Systolic murmurs	=	Abnormal heart sounds produced by abnormal heartvalves or abnormal openings between the chambers of the heart. May also be functional associated with position of body, fever, anemia, etc.
Pallor		
Irritability		
Pica	=	A depraved appetite, hunger for substances not fit for consumption
Evidence of poor nutrition	=	Obese or underweight
Widening of the "Diploe" of the skull	=	Loose osseous tissue between the inner & outer layers of the skull

V. A. General Lab Findings.

Microcytosis (microcythemia)	=	The presence of too many too-small RBC's in circulating blood
Hypochromia	=	An anemic condition in which the amount of hemoglobin in the RBC's is below normal Cells, therefore, stain poorly
Poikilocytosis	=	The presence of irregular shaped red cells in the blood (look like burrs)
Reticulocytosis (Retic's)	=	An abnormal increase in the number of young RBC's
Nucleated red cells	=	RBC's with nucleus
Thrombocytosis	=	An increase in the number of platelets in the blood
Polychromasia	=	Color variance

Thrombocytopenia (thrombopenia)	=	An abnormally small number of platelets in the blood
Erythrocytosis	=	An increase in the number of erythrocytes
Erythroid Hyperplasia	=	An increase in the bone marrow tissue that forms the red cells

V. B. Diagnostic tests: Any of the above terms may be found as qualitative indications of abnormality. Most frequently there will be a simple quantitative value. The normal values are listed below.

a. Hematocrit: Hct 35.0 ml/100 ml

b. Hemoglobin: Hb or Hgb 11.2 Gm/100 ml

c. Peripheral blood film examination or blood smear: qualitative description such as "retics" or quantitative in % _____

d. Serum iron: (concentration) 115 mg/100 ml or 115 mg%

e. Iron-binding capacity: (value) 340 mg/100ml or 340 mg%

f. Sickle cell test (Sickle hemoglobin or hemoglobin S) : Spot Test, Sephadex, Hb electrophoresis, SS (all sickle Hgb's), SA (sickle trait-mixed Hgb's) or SC _____

g. Stool examination: the results of a guaiac, hematest, benzidine, or occultest may indicate the presence of blood or melena

h. Urinalysis: Hematest may again indicate presence of blood in urine

i. Retic count: (value) 1.64 %

VI. Outcome Indications

Quantitative values of the above tests taken at a later data are outcomes indications as well as a statement such as "retics normal" ($>$ 1%).

Iron Deficiency Anemia

Minimal Care Plan

EVALUATION

A. History

*1. General diet and milk intake (vol./day--specify type of milk or formula)

2. Age of child

3. Birthweight, especially in children under 2 years

4. Character of stools

B. Physical Exam

1. Routine physical

DIAGNOSTIC TESTS

*1. Peripheral blood film examination

*2. Hemoglobin and/or hematocrit

3. Serum iron

4. Iron binding capacity

5. Sickle cell test in Black child

DIAGNOSIS

*1. Hemoglobin less than 10 gm., or Hemotocrit less than 30, or presence of hypochromic-microcytic cells in smear

2. History

MANAGEMENT

A. Treatment

*1. Iron-ferrous sulfate, glucomate, or fumarate, or Imferon prescribed

2. Parent education - diet advice regarding increasing iron-containing foods

B. Follow up

*1. Repeat Hg and/or Hct monthly until normal

*2. If Hg or Hct not improved within 1 month, re-evaluate (including history, physical exam, Hg. electrophoresis, stool exam, etc.)

EXPECTED OUTCOME

1. Indices return to normal (re. standard tables) within 60-90 days

*Essential item; all other items non-essential but redommended

Study Number _____

Provider Data Summary For
LEAD POISONING

I. A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

_____

2. Referral status

1. Initial referral from screening clinic

2. Secondary referral from another physician

3. Other _____
(Specify)

9. Unknown

3. Date of Birth _____

4. Date of screening _____

5. Date of original appointment made at time of screening _____

B. INFORMATION FROM MEDICAL RECORDS

6. First date seen after screening _____
_____No show

7. Total number of visits within one year from date of first visit after screening _____.

a. Number of visits related to lead poisoning _____

8. Previous contacts between provider and patient

1. Has seen patient during year prior to screening for lead poisoning

2. Has seen patient within past two year for lead poisoning

3. Has seen patient within past two years but not for lead poisoning

4. Has seen member of patient's family but not patient within past two years

5. Has seen patient or patient's family before, but not within past two years

6. No previous contact

9. Unknown

NOTE: Provider = same physician <u>or</u> same record system

II. A. History	Yes	No	NM
1. Age	___		___
2. Suspected ingestion of lead (in paint, putty or plaster)	___	___	___
3. Access to lead in environment	___	___	___
Specify: _____			
4. Previous or associated occurrence of			
a. Pica	___	___	___
b. Unexplained vomiting	___	___	___
c. Convulsions	___	___	___
5. Developmental assessment	___	___	___

6. Check all items below included in history

___a. Abdominal pain

___b. Ataxia

___c. Paresthesia

___d. Anorexia

___e. Fever

___f. Headaches

___g. Weight loss or gain

___h. Diet assessment

___i. Family history

___j. Mood

___k. Sleep pattern

II. B. Physical Exam	Yes	NM
1. Routine physical exam	___	___
Specify findings: _____		
2. General assessment of CNS (e.g. ataxia, gait, reflexes)	___	___
Specify findings: _____		

3. Check below all items mentioned:

___a. Evidence of motor weakness with little sensory involvement

___b. Lead lines in gums

___c. Funduscopic exam performed

C. Diagnostic Tests

	Done	A*	NM
1. X-ray of long bones and abdomen Results: _____	___	___	___
2. Blood lead level Results: _____	___	___	___
3. CBC Results: _____	___	___	___
4. Urinalysis Results: _____	___	___	___

5. Check below all tests recorded:

___a. Hemoglobin _____ (Results)

___b. Peripheral blood film examination _____ (Results)

___c. Free Erythrocyte Protoporphyrin (FEP) _____ (Results)

___d. Aminolevulinic Acid Dehydrase (ALAD) _____ (Results)

___e. Fluorescent studies of the blood _____ (Results)

___f. Blood pressure _____ (Results)

___g. Coproporphyrin presence _____ (Results)

___h. Lumbar tap examination of cerebrospinal fluid

_____ (Results)

D. Diagnostic Information (Record all diagnoses verbatim and include dates)

*Attempted

E. Treatment

	Yes	NM
1. Administration of chelating agents in a hospital		
a. Ca EDTA intramuscularly _____		
1. Evidence of lead in intestines? (by X-ray)	___	___
b. BAL intramuscularly _____	___	___
c. Other: (Specify) _____	___	___
d. Removal of lead in gut _____ (Specify)	___	
e. I.V. fluids for adequate urine flow, then fluid restriction _____ (Specify)	___	___
2. Family education regarding source _____ (Describe)	___	___
3. Administration of chelating agents outside hospital:		
a. Oral Ca EDTA _____	___	___
b. d penicillamine _____	___	___
c. Other: (Specify) _____	___	___

F. Follow-Up

1. Does provider have routine follow-up procedure? (Ask office staff)

   No

   Yes: _____
   (Explain)

	Yes	A	NM
2. Repetition of blood lead concentration exam If, yes, for how long and at what intervals, after discharge from hospital, and/or initiation of treatment? _____ _____ (Results)	___	___	___
3. Investigation and elimination of environmental lead source--e.g. referral to lead control agency	___	___	___

4. Check below all activities

___a. Diet management (increased intake of Ca, phosphorous, vitamin D)

___b. Correction of overt deficiencies (i.e., Fe)

___c. Immunize

___d. Developmental stimulation to overcome prolonged oral impulse, if present

G. Outcome Indications

	Yes	No	NM
1. Reduction in blood lead level to _____mg within _____(time period)	___	___	___
2. In severe (acute): reduction of acute symptoms such as anemia, renal,CNS findings (e.g., coma, seizures) and persistent severe vomiting within _____ (time period)	___	___	___

3. Check below if outcome recorded:

___a. Position on developmental baseline

Indicate any other change in health status recorded in the record:

_____

H. Referral Status

	Yes	No	NM
1. Was patient referred:			

If yes, specify: _____
(Specify)

_____
(Organization)

_____
(Address)

REASON FOR REFERRAL_____

I. Information from Site Visit

1. Provider's organizational affiliation

   1. Solo private practice
   2. Group private practice - single specialty
   3. Group private practice - multi specialty
   4. Public ambulatory clinic - freestanding, e.g. M&I, C&Y Health Center, with DIFFERENT organization from screening clinic
   5. Public ambulatory clinic - freestanding, e.g. PRESCAD with SAME organization as screening clinic

III. Abstractor Information

_____ Initials _____ Time to abstract _____ Date abstracted

Remarks:

_____ Attachment

PARENT/CHILD INTERVIEW

LEAD POISONING

The sample interview contained in Part Two may be used for all tracers, with the following adaptations for lead poisoning.

Vernacular term: Problem from eating paint or plaster

Part III, Q. 2:
1. eating paint, plaster, or dirt
2. lethargy, apathy, sleepiness
3. confulsions, unexplained vomiting
4. marked behavior change

Part IV, Q. 11:
1. repainting, paint removal
2. other environmental changes

Lead Poisoning (Plumbism)

Reference Sheet

I. History

A. Possible lead sources - duration in present dwelling; when built; where else patient spends time; previous address; inside and outside paint checked for lead; industrial or residential area.

B. Terms which may be used in history:

Pica - A craving for & ingestion of substances not normally considered food

Ataxia - A loss of muscular coordination

Paresthesia - Excessive skin sensitivity with abnormal sensations such as burning, numbness, & tingling

Anorexia - Loss of appetite

C. Developmental milestones - see Denver Developmental Screening Test form

II. Physical Exam

A. CNS = Central Nervous System

B. Funduscopic exam = This is done with an opthalmoscope to reveal such things as whether the fundus is normal, whether discs are present or checked, whether the retinal vessels, are normal, and whether exudates are present.

III. Diagnostic Tests

A. X-ray of long bones and abdomen

Results: Heavy metal or lead lines in growing end of long bone; opaque foreign bodies in gastrointestinal tract.

B. Blood lead concentration, or blood lead level, results will be stated in terms of mg/100 ml (e.g., .05 mg/100 ml)

C. CBC Complete Blood Count (includes white count, differential, & Hb or hematocrit)

RBC - Red Blood Cell Count, 4.5 million/mm^3

WBC - White Blood Cell Count, 10,000/mm^3

Differential: _____% Neutrophils, _____% Eosinophils, _____% Basophils

D. Urinalysis: Albumin (+ or -), Glucose (+ or -). May also be stated in mg. per cent. Sediment(rbc's, wbc's, crystals)(+ or -)

E. Other test results which may have been recorded.

Hemoglobin (Hb) - above 10 gm/100 ml is considered normal.

Peripheral blood film examination - Blood smear or Blood film.

Might see basophilia - e.g., 5 - 10 % rather than the normal 2%

Aminolevulinic acid dehydrase (ALAD) - decrease in activity of ALAD is a good early sign of lead intoxication

Fluorescent studies - examine blood film under light to see if it fluoresces.

Coproporphyrin presence - (+ or -) presence of coproporphyrin(s) indicates abnormal condition.

Free Erythrocyte Protoporphyrin (FEP) - Increased activity indicates abnormal condition.

IV. Chelating agents: Chemicals which bind with heavy metals and facilitate removal of these metals from the body, usually via the kidneys.

BAL(British Anti-Lewisite), Calcium EDTA(Versenate) are two common chelating agents. See drug sheet for more information.

Lead Poisoning

Minimal Care Plan

EVALUATION

A. History

*1. Age

*2. Suspected ingestion of lead (in paint, putty, or plaster)

*3. Access to lead in environment (what, where, when)

*4. Presenting symptoms and duration, with specific mention of:
   a. Pica
   b. Unexplained vomiting
   c. Convulsions

*5. Developmental assessment

B. Physical Exam

*1. Routine physical exam

*2. General assessment of CNS

DIAGNOSTIC TESTS

*1. X-ray long bones and abdomen

*2. Blood lead concentration

3. CBC

4. Urine analysis

DIAGNOSIS

*1. Blood lead level > than 50-80 mcg

MANAGEMENT

A. Treatment for severe lead poisoning (> 80 mcg)

*1. Administration of chelating agents in hospital:
   calcium EDTA (except if evidence of lead in intestines)
   intramuscularly and BAL

*2. Removal of lead in gut

*3. Fluids for adequate urine flow (I.V.), then fluid restriction

*4. Family education regarding lead source

B. Treatment for mild to moderate lead poisoning (50-80 mcg)

*1. Oral Ca EDTA, or

*2. d penicillamine

*3. Family education regarding lead source

C. Follow Up

*1a. Repetition of blood lead concentration examination monthly for first six months following discharge from hospital or initiation of treatment, if patient returns to same environment

*1b. If patient returns to different environment, follow monthly for two months

2. After first six months repeat blood examination every 3-6 months to assure maintenance of normal levels, until reasonable assurance of lead-free environment, or beyond pica age (> 2-4 years)

*3. Investigation and elimination of environmental lead source

EXPECTED OUTCOME

*1. Reduction in blood lead level to < 60 mcg within 2-4 weeks

*2. In severe acute lead poisoning, reduction of acute symptoms such as anemia, renal and CNS findings within 1-2 weeks

*Essential item; all other items non-essential but recommended

Study Number _____

Provider Data Summary For
ECZEMA

I. A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

_____

2. Referral status

1. Initial referral from screening clinic

2. Secondary referral from another physician

3. Other _____
(Specify)

9. Unknown

3. Date of Birth _____

4. Date of screening _____

5. Date of original appointment made at time of screening _____

B. INFORMATION FROM MEDICAL RECORDS

6. First date seen after screening_____

_____No show

7. Total number of visits within one year from date of first visit after screening _____.

a. Number of visits related to eczema _____

8. Previous contacts between provider and patient

1. Has see patient during year prior to screening for eczema

2. Has seen patient within past two years for eczema

3. Has seen patient within past two years but not for eczema

4. Has seen member of patient's family but not patient within past two years

5. Has seen patient or patient's family before, but not within past two years

6. No previous contact

9. Unknow

NOTE: Provider = same physician <u>or</u> same record system

II. A. History

	Yes	No	NM
1. History of skin eruptions	___	___	___
2. Information on age of onset	___		___
3. Information on duration of symptoms	___		___
4. Distribution of lesions	___	___	___
5. History of other allergies	___	___	___
6. History of exposure to allergens	___	___	___
7. History of food allergens	___	___	___

8. Check any of the following mentioned on record:

___ a. History of exposure and response to medications

____ internal

____ topical

___ b. History of itching

___ c. Seasonal occurrence

___ d. Family history of allergies

B. Physical Examination

	Yes	No	NM
1. Skin lesions (distribution, sites) _____ (Specify)	___	___	___
2. Secondary infection(s) _____ (Specify)	___	___	___
	Abn	Norm	NM
3. Nose, ears, and chest examined _____ (Specify)			
4. Other allergies found, such as hayfever, asthma Specify: _____	___	___	___

5. Check if the following criterion mentioned on record:

___ a. Hair, skin, and nails examined

C. Diagnostic Tests

	Done	A*	NM
1. Elimination diet (if history of food irritants) _____ (Results)	___	___	___
2. Intradermal skin test _____ (Results)	___	___	___

3. Check any of the following items mentioned on record:

___a. Patch test_____

___b. Nasal smear for eosinophils_____

___c. CBC (complete blood count)_____

___d. Immuno-diffusion test_____

___e. Culture and scrapings for fungi_____

___f. Passive transfer technique_____

D. Diagnostic Information (Record all diagnoses verbatim and include dates)

E. Treatment

	Yes	No	NM
1. Avoidance of known causes of skin irritation?	___		___
Detail: _____			
2. Parent/patient education?	___		___
Detail: _____			
3. Local application of hydrocortisone preparations?	___	___	___
Detail: _____			
4. Systemic corticosteroid therapy? (by mouth or injection)	___	___	___
Detail: _____			

5. Check any of the following measures which are mentioned in record:

___a. Oral antihistamines

___b. Hygiene (nails and cover skin)

___c. Diet

___d. Antibiotic for secondary skin infection

___e. Soaks (for severe cases)

___f. Anti-pruritic medication

___g. Emollients

___h. Wet dressings

___i. Ultra-violet lights

___j. Grenge-ray

F. Follow-Up

	Yes	A	NM
1. Was patient monitored during acute state every _____ weeks for _____(time period)	___	___	___
2. Check if the following mentioned on the record:			
___a. Monitored every 6-12 months after achieving steady state	___	___	___
___b. Refer to Public Health Nurse	___	___	___

G. Outcome Indications

	Yes	No	NM
1. Reduction of severity of lesions within _____ (time period)	___	___	___
2. Reduction of extent of skin involvement within _____ (time period)	___	___	___
3. Disappearance of dermatitis within _____ (time period)	___	___	___

Indicate any other change in health status mentioned in record:

_____

H. Referral Status

	Yes	No	NM
1. Was patient referred:			

If yes, specify: _____
(Specify)

_____
(Organization)

_____
(Address)

REASON FOR REFERRAL _____

I. Information from Site Visit

1. Provider's organizational affiliation
   1. Solo private practice
   2. Group private practice - single specialty
   3. Group private practice - multi specialty
   4. Public ambulatory clinic - freestanding, e.g. M&I, C&Y Health Center, with DIFFERENT organization from screening clinic
   5. Public ambulatory clinic - freestanding, e.g. PRESCAD with SAME organization as screening clinic
2. Provider's ethnicity
   1. Caucasian
   2. Black
   3. American Indian
   4. Spanish surname
   5. Other _____ (Specify)
   8. Unknown

III. Abstractor information

_____ Initials _____ Time to abstract _____ Date abstracted

Remarks:

_____ Attachment

PARENT/CHILD INTERVIEW

ECZEMA

The sample interview contained in Part Two may be used for all tracers, with the following adaptations for eczema.

Vernacular terms: sensitive skin
allergic rash

Part III, Q. 2:
1. breaking out, or rash
2. food allergy
3. sensitive skin, skin cracking

Part IV, Q. 11:
1. salve, lotion
2. avoidance of animals, fabrics, foods
3. "wrapping" in cloth or plastic

Eczema

Reference Sheet

General

Flexures = Creases at elbows and knees. These are places where exzema frequently appears.

Allergens = Substances which stimulate an allergic reaction and produce antibodies such as:

wool	
house dust	ragweeds
soap	pollens
chemicals	molds

May be inhalant, ingested or contact

Food Allergens = Food which stimulate allergic reactions such as:

egg	wheat
chocolate	milk

Associated Conditions = For the skin, these are such conditions as:

Infections - pyoderm, impetigo

Inflammations - seborrheic dermatitis, including cradle cap

Characterizations or Symptoms

Dermatosis = A nonspecific term used to indicate a skin condition having to do with lesions or eruptions of any kind

Dermatitis = Inflammation of the skin

Erythema = Redness of the skin, usually associated with inflammation

Lesion = An abnormal structure in any organ or tissue

Eczema
Reference Sheet

Lichenification	=	Thickening of the skin
Papule	=	A small nodular eruption of the skin (e.g. goose bumps)
Vesicle	=	A small eruption of the skin containing serum like a blister If it contains pus it is a pustule.
Crusting		
Eruption		
Itching	=	Pruritis
Oozing, weeping	=	Exudative lesions

Drugs

Internal include:

Antihistamines
Anesthetic agents
Sedatives
Antibiotics

Topical include:

Burrow's solution
Lassar's Paste - zinc oxide paste
Hydrophilic preps - aquaphor
Steroid preps
Hexachlorophene
Benzalkonium chloride
Zephiran

Eczema

Minimal Care Plan

EVALUATION

A. History

*1. History of skin eruptions
   age of onset
   duration

*2. Distribution of lesions

3. Patient history of other allergies

4. Exposure to allergens

5. Food irritant history

B. Physical Exam

*1. Description of skin lesions
   distribution
   sites

*2. Check for secondary infection

3. Examine nose, ears, chest

4. Other allergic findings (i.e. hay fever, asthma)

DIAGNOSTIC TESTS

1. Elimination diet if history of food irritants

DIAGNOSIS

*1. Typical appearance and location of lesions

MANAGEMENT

A. Treatment

*1. Avoidance of known causes of skin irritation

*2. Parent/patient education

3. Local application of hydrocortisone preparations

B. Follow Up

1. Monitoring every 2-4 weeks during acute stage if not improved.
   No monitoring if condition gets better.

*Essential item; all other items non-essential but recommended

Study Number _____

Provider Data Summary For
PHIMOSIS

I. A. GENERAL INFORMATION - TO BE FILLED IN PRIOR TO CALLING ON PROVIDER

1. Synopsis of reason for referral

_____

_____

2. Referral status

1. Initial referral from screening clinic

2. Secondary referral from another physician

3. Other _____
(Specify)

9. Unknown

3. Date of Birth _____

4. Date of screening _____

5. Date of original appointment made at time of screening _____

6. First date seen after screening _____
_____No show

7. Total number of visits within one year from date of first visit after screening _____.

a. Number of visits related to phimosis _____

8. Previous contacts between provider and patient

1. Has seen patient during year prior to screening for phimosis

2. Has seen patient within past two years for phimosis phimosis

3. Has seen patient within past two years but not for phimosis

4. Has seen member of patient's family but not patient within past two years

5. Has seen patient or patient's family before, but not within past two years

6. No previous contact

9. Unknown

NOTE: Provider = same physician <u>or</u> same record system

II. A. History

	Yes	No	NM
1. Recurrent inflammation of glans and/or foreskin	___	___	___
2. Difficulty in retracting foreskin	___	___	___
3. History of paraphimosis	___	___	___
4. Difficulty in urination (dysuria)	___	___	___

5. Check if any items below mentioned in record

___a. Ballooning of foreskin on urination

___b. "Stuttering stream"

B. Physical Exam

	Yes	No	NM
1. Narrowing of preputial opening preventing retraction of prepuce _____ (Specify)	___	___	___
2. Can retracted foreskin be returned to normal position? _____ (Specify)	___	___	___
3. Inflammation of glans (balanitis) _____ (Specify)	___	___	___

4. Check all items below mentioned in record

___a. Examination of external meatus

___b. Urination observed

___c. Examination of rest of penis

C. Diagnostic Tests

1. Check any of the following tests done and fill in results

___a. Urinalysis _____ (Results)

___b. Urine culture _____ (Results)

D. Diagnostic Information (Record all diagnoses verbatim and include dates)

E. Treatment

	Yes	No	NM
1. Circumcision	___	___	___
1a. (If yes, was it at parents' request or insistence?)	___	___	___
2. Parent/patient education _____ (Specify)	___		___
3. Check if on record			
___a. Treatment by repeated retractions			

F. Follow-Up

1. Does provider have routine follow-up procedure? (Ask office staff)

   No

   Yes: _____
   (Explain)

2. Was patient re-examined within _____ (time period)

	Yes	A*	NM

G. Outcome Indications

	Yes	No	NM
1. If surgery, was there cessation of symptoms? NA ___	___	___	___
2. Was there change in parental attitudes?	___	___	___

Indicate any other change in health status mentioned in the record:

_____

H. Referral Status

1. Was patient referred: Yes No NM

   If yes, specify: _____
   (Specify)

   _____
   (Organization)

   _____
   (Address)

   REASON FOR REFERRAL _____

I. Information from Site Visit

1. Provider's organizational affiliation

   1. Solo private practice
   2. Group private practice - single specialty
   3. Group private practice - multi specialty
   4. Public ambulatory clinic - freestanding, e.g. M&I, C&Y Health Center, with DIFFERENT organization from screening clinic
   5. Pulic ambulatory clinic - freestanding, e.g. PRESCAD with SAME organization as screening clinic

*Attempted

2. Provider's ethnicity
   1. Caucasian
   2. Black
   3. American Indian
   4. Spanish surname
   5. Other _____ (Specify)
   8. Unknown

III. Abstractor information

_____ Initials _____ Time to abstract _____ Date abstracted

Remarks:

_____ Attachment

PARENT/CHILD INTERVIEW

PHIMOSIS

The sample interview contained in Part Two may be used for all tracers, with the following adaptations for phimosis.

Vernacular terms: tight foreskin

difficulty with pulling back the foreskin

Part III. Q. 2:

1. inflamed penis, foreskin
2. couldn't pull foreskin back, tight foreskin
3. difficulty urinating, ballooning foreskin

Part IV, Q. 11:

1. retraction of foreskin
2. leaving foreskin alone
3. circumcision

Part V, Q. 3: Replace with the following:

Has there been any change in _____'s condition?

___1. No

a. Are you concerned about _____'s condition?

___1. No (GO TO Q. 5)

___2. Yes

a. Why are you concerned?

___2. Yes

a. Why do you think so? (PROBE with questions regarding symptoms from Q.2, Section III, e.g., improvement or worsening of the following):

inflammation of foreskin or penis
tight foreskin
foreskin balloons when urinating

Part V, Q. 4: OMIT

Phimosis

Reference Sheet

Phimosis - nonretractable foreskin

Paraphimosis - retracted foreskin cannot be returned to normal state; penis constricted by foreskin

Difficulty in urination(dysuria) - such as pain, burning during urination, difficulty in passing urine

"Stuttering stream" - intermittent stopping and starting of urine stream

Balanitis - inflammation of the glans penis

Posthitis - inflammation of the prepuce

Pyuria - purulent discharge

UTI - urinary tract infection

Diagnoses related to phimosis: paraphimosis

balanitis

concretion of prepuce - due to concretion of smegma

Diagnoses not related to phimosis: gonococcal infection

trichomonal infection

moniliasis

syphilis

undescended testes = cryptorchidism

Meatus - opening of urethia(in male, at head of penis)

Phimosis

Minimal Care Plan

EVALUATION

A. History

*1. Recurrent inflammation of glans and/or foreskin

*2. Is there difficulty in retracting foreskin

*3. History of paraphimosis

4. Difficulty in urination

B. Physical Exam

*1. Examination for narrowing preputial opening, preventing retraction of prepuce

*2. Examination for retracted foreskin that cannot be pulled back

3. Examination of glans

DIAGNOSIS

*1. Can't retract foreskin (patient 2 years or older)

MANAGEMENT

A. Treatment

*1. Parent/patient education

2. Circumcision only if phimosis with complications such as paraphimosis, or repeated infection

B. Follow Up

1. Recheck at normal checkup time

EXPECTED OUTCOME

1. If surgery, cessation of symptoms immediately

2. Change in attitudes of parents towards condition

*Essential item; all other items non-essential but recommended

Part Four

SOURCE MATERIALS

Selection of Tracer Conditions

Development and Provider Review of Minimal Care Plans

Development of Procedures for Data Collection

A. Selection of Tracer Conditions

The tracer method is a procedure in which adequacy and impact of care are measured for a specific set of conditions (tracers), and the results are generalized to medical care provided in that setting for patients with similar conditions. Therefore, it is important to identify and select tracer conditions that are representative of medical conditions likely to be found in the patient population of the medical care setting under review.

The procedure for selecting appropriate tracers described below was used by The University of Michigan evaluation team to choose the eight tracers presented in this manual. The choice of tracers was, in part, governed by the evaluation objective of the Michigan Tracer Evaluation Study. It was the purpose of this study to evaluate the adequacy and impact of diagnosis and treatment provided to children who were screened and referred in the Michigan Early and Periodic Screening, Diagnostic and Treatment (EPSDT) program.

The first step in selecting tracers is to identify a list of *possible* conditions which may be used as tracers. A list of conditions which had a reasonable probability of occurring by screening in the EPSDT population was compiled. This initial list was developed using the Hospital-International Classification of Diseases, Adapted, Second Edition, and the EPSDT Screening Summary and History forms. In addition, EPSDT Quarterly Reports for 1974 contain frequency distributions of referral categories by age and clinic. Since the Summary forms list referrals by broad categories, it

was only possible to approximate the frequency of referrals for specific tracer conditions, e.g., the referral category genitalia may contain two tracer conditions, phimosis and vaginitis, as well as other diseases.

The next step in identifying candidate tracer conditions was to convert broad descriptive categories into discrete conditions (pathological entities). For example, upper respiratory infection was considered as a candidate tracer condition. Since it represents several different etiologies and treatment modalities, for which minimal care cannot be specified, it was divided into specific entities such as tonsillitis, acute pharyngitis and bronchitis. Similarly, dermatitis was divided into eczema, impetigo and seborrhea.

By this procedure, a list of thirty-one candidate tracer conditions was developed. To narrow the list of candidate conditions to those which would be useful as tracers, decision making criteria were adapted from the Kessner model and applied to the list.

Application of Decision Criteria

Potential tracer conditions were selected by sequentially applying certain decision-making criteria to each of the tracer conditions.* These decision making criteria were:

1. A tracer should have a significant functional impact. The EPSDT program is designed to screen only for those conditions believed to have a

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* The decision-making criteria described were modified from those used by David Kessner in his original application of the tracer method: Kessner, David M. and Carolyn Kalk. A Strategy for Evaluating Health Services. Institute of Medicine. National Academy of Sciences. Washington D.C., 1973.

functional impact--i.e., conditions which have a significant impact on the life of the patient. Therefore, candidate tracers automatically met this criterion. An exception is sickle cell trait, which may not have a functional impact.

2. A Tracer should be relatively well defined and easy to diagnose. It is important to select tracers which fulfill this requirement since actual care received is evaluated in comparison to minimal care criteria developed for each condition. Although some conditions such as nutritional deficiency (obesity and malnutriton) may be common in the population and frequently referred, they are inappropriate as tracers because they cannot be defined as clear-cut conditions (pathological entities) with specific causes (etiologies) and treatment requirements. This is also true of conditions such as heart murmurs and vision disorders.

3. Prevalence rates should be high enough to permit the collection of adequate data from a limited population sample. Since the population of EPSDT program participants is finite and narrowly defined, it is important to select tracers which appear frequently enough to yield an adequate population of patients from which to sample. It is necessary to have a large enough number of cases to test the hypotheses on adequacy and impact of care. To the extent possible, the analysis should control for social and demographic characteristics of the patients, screening clinics and providers. The frequency distributions of referral categories reported in the Michigan Department of Social Services and Department of Public Health EPSDT

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the EPSDT population), and why? Since social, cultural, economic and behavioral factors may influence the distribution of certain health problems, it is necessary to know what epidemiologic studies have revealed. This facilitates comparison of morbidity rates found in the study population with those that epidemiologic research suggests should prevail. For example, epidemiologic research suggests that disproportionately high rates of lead poisoning and nutritional deficiency are likely to be found in low income, largely urban populations. This criterion is relevant to the present project because the characteristics of the EPSDT population can be clearly described. The epidemiologic characteristics associated with each of the tracer candidates have been compiled.

Development of the Process Chart

By sequentially applying these decision criteria, the initial list of tracer candidates was narrowed to 18, and then to 12. A process chart of activities associated with providing health services was developed. The chart provided a framework for structuring the minimal care plans, which contained three categories of activities: 1) evaluation including history and physical examination, laboratory, X-Ray and other diagnostic tests; 2) management including diagnosis and treatment, counseling, hospitalization, and referral; and 3) follow-up. Each of the candidate tracer conditions was charted in an attempt to identify which of the processes would be highlighted by each tracer. Some processes will be more important in diagnosing and managing certain tracer conditions than in others. For example, an

adequate history and physical examination are crucial to the diagnosis and treatment of tracers such as otitis media and asthma, whereas, these are less important than laboratory findings in iron deficiency anemia. Similarly, some conditions will rarely require hospitalization, while others, such as acute lead poisoning and circumcision for phimosis are likely to require hospitalization. It is important to select tracers so that *all processes are represented in sufficient numbers* to make statistically significant statements regarding the adequacy of various components of care. The process chart was invaluable in indicating which tracers should be retained, and which could be eliminated.

In applying the two major selection procedures--Kessner's decision-making criteria and the process chart--the list of candidate tracers was narrowed to eight. Appendix III gives a list of all the tracer candidates and designates the reasons for keeping or eliminating each. Minimal care plans were formulated for 12, of which eight were eventually used in the study.

B. Development and Provider Review of Minimal Care Plans

Standard criteria for care are needed to assess the adequacy and impact of diagnosis, treatment, and follow-up on an ongoing basis. The University of Michigan evaluation team designed minimal care plans for 12 tracers which were used as standards to evaluate care provided following referral from the EPSDT program.

The minimal care plan for each tracer consists of a set of medical procedures that constitute the minimum protocol essential for adequate and appropriate care. Given the delivery of minimum care, certain changes in the condition (outcomes) are expected; estimates of these have been included in the plans.

The development of the minimal care plans consisted of five stages.

STAGE ONE In the initial stage, members of the project staff (one physician, one nurse, and one research methodologist) formulated comprehensive lists of all those items of care applicable to the diagnosis and treatment of all of the tracer conditions. Staff reviewed standard pediatric textbooks, relied on experience gained through clinical practice, and consulted with experts in relevant specialties to compile the lists. These minimal care plans included a description of necessary procedures for 1) evaluation, including history, physical examination and diagnostic test, 2) management, including diagnosis, treatment, counseling, hospitalization and referral, and 3) follow-up. They also included outcomes which could be expected within designated time periods.

STAGE TWO The purpose of the University of Michigan Evaluation Project was the development of an evaluation process which reflects community standards of minimal care that are *practical* and *feasible* rather than ideal academic standards. During stage two, project staff compiled lists of both specialists appropriate to each of the tracer conditions, and community-based, practicing pediatricians. Practicing pediatricians were selected from Ann Arbor to represent providers who practice near a university medical complex; and from Detroit to represent providers who practice in the inner city or in the suburbs of a large metropolitan area. No attempt was made to achieve a random sample of specialists and community providers.

Some comment must be made about the response of the providers to requests for their cooperation. Both specialists and primary care providers were interested in the project and eager to learn more about the EPSDT system. All contacted providers agreed to participate.

STAGE THREE The activity during this stage was to convert the minimal care plans to what became known as "minimal care check lists" (described below) for review by specialist and primary care providers. Providers were instructed to complete them independently, with no knowledge of the judgments and opinions of the others. Providers were asked to rate each item on the checklist as: 1) *essential;* 2) *non-essential* but recommended and 3) *not recommended.*

Since data was collected by a retrospective review of medical records, it was important to obtain from providers an indication of whether these items should be recorded on the record. The University of Michigan study team was concerned about how valid a data collection method was abstracting from

records. They were also concerned about physicians' belief that an item might be done but not recorded. Therefore, the checklists were structured so that each checkmark would specify both whether an item was essential to minimal care and what its likelihood was of appearing on the record. Space was left for additional items, comments or qualifiers. The final form was standardized, but also open-ended. All additions were rated by the above method, and quantitative values such as dosage levels or time periods for expected outcomes were designated. Finally, where applicable, providers were asked who should administer the care by indicating p for primary care provider, and s for specialist with the type of specialist designated.

Minimal care checklists were mailed to five specialists for each tracer condition for review and comment. This provided input from individuals with expert knowledge and experience in treating each of the tracer conditions. In addition, checklists for all of the tracer conditions were mailed to ten community-based pediatricians. This provided input regarding treatment of a tracer condition in actual general pediatric practice.

STAGE FOUR

During the fourth stage, project staff tallied responses to the checklists. Specialist responses were tallied separately from the "community provider" responses. To indicate consensus for a discussion, no more than two providers could disagree with the majority.

Some observations by The University of Michigan Study Team are worth noting. Provider responses about whether an item would be recorded on the record reflected an almost unanimous opinion that if an item is essential, it must be recorded. With this information, the study team felt more

confident about recording an item as "not done" if it does not appear on an individual's medical record. In addition, there was frequent agreement about the essentiality of individual items of care.

STAGE FIVE

Finally, the tallied responses were submitted to two community provider panels which met several times to review and reach consensus on which criteria consituted minimally essential care for each tracer condition. Discussion papers, indicating suggested consensus items, modifications in criteria, and/or additional criteria were submitted to the panels. The panels were asked to review the responses by both general pediatricians and specialists. Each panel was instructed to reach a consensus regarding essential, recommended and non-essential items for minimally acceptable medical care in community practice. (This included specifying quantitative parameters for all time periods, and all laboratory and prescription values, and indicating type of provider recommended to administer care.) Each panel reviewed the plans for all tracers separately. Thus each plan was reviewed twice.

One rather surprising element was that the panels frequently disagreed with the mailed original responses (checklists) and eliminated items which had been deemed essential. This was the result of a persistent emphasis on minimal acceptable care. Because of this, the resultant plans are probably extreme. Items above the minimal are retained and weighted to get some idea of the range of care on a continuum above minimal. Through this procedure, it is hoped that realistic guidelines have been established to evaluate the quality of care EPSDT participants receive as a result of screening referrals.

Development and review of minimal care plans was a long and complex task. Drafting of initial minimal care plans, conversion to checklist format, and compilation of all responses for discussion entailed a total of some nineteen drafts in five different formats, and required two months to complete. The lead time necessary to convene the two community provider panels also contributed to the lengthy process. The review and comment process required about one hour per minimal care plan for each panel. Despite the considerable amount of time required for the review process, all participants were excited by the free exchange of ideas which took place and were pleased with the opportunity for such discussions. However, this lengthy time commitment is also a major factor to consider should a local care setting decide to develop tracers for study other than those eight provided in this manual.

C. Development of Instruments and Procedures for Data Collection

The procedures, instruments, and support documents contained in this manual were developed by members of the Michigan EPSDT Evaluation Project for use in the project entitled "Tracer Evaluation of Diagnosis and Treatment of EPSDT Referrals." Project staff included a physician, a nurse, a program evaluator, a biostatistician, a research methodologist, and a project administrator, and several data collectors. A brief summary of the project design follows.

The University of Michigan EPSDT Tracer Evaluation Project

All states and territories which have a Title XIX (Medicaid) program are now required by the Federal government to have an Early and Periodic Screening, Diagnosis and Treatment (EPSDT) program. The legislative base for the program was passed in the 1967 amendments to the Social Security Acts. The defined purpose of the program is to identify as early as possible those children in Medicaid families who have acute and chronic conditions which are not under a physician's care and which could benefit by early and ongoing treatment to avoid long-term or future disability. In addition, it is hoped that access to and participation in the medical care system will be facilitated.

Implementation of the EPSDT program on a national scale was very slow. Michigan began its program in 1973. The Michigan Department of Social Services (MDSS) has overall responsibility for the program; delivery of screening services is contracted to the Michigan Department of Public Health (MDPH), which screens eligible children at 120 clinics situated around the state. Since its inception, the Michigan EPSDT

program has become a leader in the nation; through November 1976, 450,000 children had been screened. Diagnosis and treatment services are provided primarily in private physicians' offices and hospital outpatient departments on a referral basis from the screening clinics.

In view of the large expenditure of resources which such an effort represents, the MDSS felt that periodic evaluation of all parts of the system was essential. In discussions with members of the staff of the Program in Maternal and Child Health of The University of Michigan School of Public Health in early 1974, the MDSS described its ongoing monitoring of screening clinic operations and support services (e.g., outreach, transportation and follow-up). Agreement was reached between MDSS and The U-M group to undertake the evaluation of the quality of medical care which the children were receiving after referral. The EPSDT Tracer Evaluation Project focused primarily on the diagnosis and treatment phases of the EPSDT system. It was a joint project of The University of Michigan School of Public Health Program in Maternal and Child Health and the Michigan Department of Social Services, in close cooperation with the Michigan Department of Public Health. The project was funded by the Social and Rehabilitation Service of the Department of Health, Education, and Welfare, through the MDSS.

The objectives of the EPSDT Evaluation Project were: 1) to evaluate the adequacy and impact of diagnosis and treatment delivered after screening; and 2) to develop a method for evaluating the diagnosis and treatment phases of the EPSDT system which would be implemented on an ongoing basis. The manual of which this chapter is a part is the outcome of efforts to meet this latter objective.

The evaluation method which the members of The University of Michigan Study Team chose to adapt for this project is the tracer method. Using this method a limited number of medical conditions, or *tracers*, are selected for study, based on their prevalence in the population, and on their representation of processes involved in the delivery of medical care (e.g., history-taking, diagnostic tests, follow-up, etc.). The care received by persons with tracer conditions is evaluated by comparing it to standard criteria or *minimal care plans* developed for each tracer. These standards were developed in two stages. First, detailed lists of possible care criteria, broken down by functional categories, were mailed to both specialist and generalist physicians. They were asked to respond to each item in writing, designating it as essential, non-essential, or not recommended. In the second stage, panels of pediatricians in community practice met to review the mail responses, and to arrive at a consensus of what constitutes minimal acceptable care, as it is practiced in the community.

The EPSDT Evaluation Project collected data from three sources on diagnosis and treatment services received after screening; 1) screening clinic records were abstracted for patients referred for suspicion of a tracer condition; 2) medical records of patients selected for the study were abstracted to determine what diagnosis was assigned, and what treatment was carried out (This was done in several hundred private physicians' offices.); and 3) patients or parents were interviewed to determine what changes in health status may have occurred as a result of the screening, diagnosis and treatment.

Data were examined to determine both the degree to which care provided in the EPSDT system is adequate measured against the minimal care standards, and the degree to which screening and treatment had an impact on the health status of EPSDT participants.

It is important to point out that data were analyzed only in aggregate form. The purpose of the project was not to audit individual providers but to determine the overall adequacy of care received. Data were aggregated and examined by comparisons of provider groups (e.g., providers in solo practice compared to providers in group practice), not individuals. Throughout the study, confidentiality and identity of both patients and providers was carefully protected. All data forms were anonymous, and retained by The University of Michigan.

It was intended that the information obtained through this project would be used to assess the effectiveness and impact of the EPSDT program, and to provide valuable information for planning and administration of the EPSDT program in Michigan.

The nature of the system in which any evaluation is conducted, and the maximum time allotted for completion of the evaluation both contribute extensively to decisions concerning the data collection plan. Within these considerations there are a number of principles which guide decisions about procedures to be used in data collection.

The criteria by which decisions are made with respect to data collection procedures and forms are:

1. Maximize accuracy, completion and objectivity. Procedures and forms should be designed in such a way that information gathered reflects most accurately and completely what *actually occurred*, and that aggregate results of interviews reflect what respondents *actually reported*.

2. Maximize reliability. Since it is most likely that data collectors will be persons who are not knowledgeable about medical services actually provided, forms and procedures should be designed so that two or more data collectors can gather information from the same source, producing identical results. That is, when information is transferred from a written record or spoken word, to a pre-designed instrument, the process could be replicated by two different data collectors with the results being the same.

3. Maximize efficiency. Collect only *useful* information, and design the *process* of data collection to maximize productive use of time. When deciding what information to collect, ask yourself repeatedly what question this particular item of information will answer. If the question can be answered by some other piece of information, or if the question is not significant to warrant the effort required to collect the information, then delete this item. It is often tempting to include items because they seem interesting but unless they contribute significantly to the overall evaluation objective, they take more time and effort than they are worth.

In order to translate these principles into operational forms, it is necessary to think through alternative strategies for data collection, and the advantages and disadvantages of each alternative.

Generally speaking, the two alternatives in form design are: 1) unstructured, open-ended forms--which encourage the collection of large amounts of information, the relevant parts of which then need to be abstracted, and a structure for aggregating the pieces imposed; and 2) structured, close-ended forms which encourage the collection of only relevant information, and impose a structure for coding and aggregating.

The general advantages of open-ended, unstructured forms are:

--more complete and detailed information may be obtained;

--minimal amounts of specialized training are required if data collectors have only to transcribe, rather than interpret, information;

--more consistency may be obtained if only one coder imposes structure and interpretation on information than several abstractor/data collectors working independently.

The general disadvantages of open-ended unstructured forms are:

--the amount of time required to transcribe voluminous information in the field is prohibitive and inefficient;

--it is more difficult for a coder to correctly interpret information away from the actual data source;

--much more information than is actually needed will be collected.

The advantages of structured forms are:

--only that information actually required will be collected;

--efficiency in use of data collector's time is maximized;

--the type of information collected and interpretations made are standardized by the structure imposed by the form.

The disadvantages of structured forms are:

--abstractors/data collectors may impose inconsistent interpretations on the information;

--potentially useful information inadvertently left off the form will be lost;

--specialized training of data collectors and periodic checks for reliability are required.

The Michigan Evaluation Project decided on moderately structured, close-ended forms. This decision was based on the nature of the data being gathered, and the variety of sites from which information was obtained. The design of the forms is the result of numerous and regular meetings and debates on the relative merits of the several alternatives. The results reflect the opinions, professional expertise, and experience of all the members of the Michigan Evaluation Project. They also reflect the constraints and requirements of the system being evaluated.

Appendix

IA. Sample Patient Consent Letter

IB. Sample Patient Consent Form

IC. Sample Provider Access Letter

II. Diagnostic Terminology

III. Selection of Tracer Candidates

Appendix 1-A

PATIENT CONSENT LETTER

SAMPLE

Dear _____:

The Department of Health, Education, and Welfare is interested in finding out about the health care which children are receiving from the EPSDT (Early Periodic Screening Diagnosis and Treatment) Program, or Project Health, as some people call it. The University of Michigan, School of Public Health is presently conducting a study of Michigan's EPSDT Program. We understand from the state's Medicaid records that your family has participated in the program.

We would appreciate it if you would now agree to have your child(ren)'s medical records reviewed and later talk to one of the University of Michigan interviewers to answer some questions they have regarding how the program has worked for your child(ren). Your participation is voluntary and all your responses will, of course, be confidential.

We hope that you will agree to help in this important effort to collect information to improve the EPSDT program and thus, your child's health. We will need to obtain from you a signed statement indicating your agreement to participate with the understanding that your confidentiality will be protected. Please return the signed statement in the enclosed envelope.

Your cooperation is appreciated.

Sincerely,

Appendix 1-B

PATIENT CONSENT FORM

SAMPLE

It has been explained to me that a study of the health care which children are receiving under EPSDT is being conducted for the Department of Health, Education, and Welfare by The University of Michigan, School of Public Health. I understand that the purpose of this study is to find out how the EPSDT program can be more effective to children needing health screening, diagnosis, and treatment.

I understand that my child(ren)'s medical records will be reviewed by a representative of The University of Michigan study team and I consent for this review to take place. In addition, I consent to discuss my child(ren)'s experiences in the EPSDT program with an interviewer from The University of Michigan at a time convenient to me.

I understand that all information obtained either through medical records or from me directly will be completely confidential and anonymous. I understand that any information obtained in the course of this study by the study team will in no way influence my eligibility for or receipt of Medicaid benefits.

Name of Parent or Guardian: _____

Signature: _____

Telephone Number: _____

Date: _____

____ Yes, I consent to participate in this study.

____ No, I do not consent to participate in this study.

Appendix 1-C

PROVIDER ACCESS LETTER

SAMPLE

Dear Dr._____

A research project entitled "Tracer Evaluation of Diagnosis and Treatment of EPSDT Referrals" is currently being conducted at The University of Michigan under my direction in cooperation with the Michigan Department of Social Services. The purpose of this project is to assess the adequacy and impact of diagnosis and treatment provided to children referred after screening in the Medicaid EPSDT system. An abstract is enclosed which describes the objectives of the project, the sources of data and the procedures we have developed for data collection and analysis.

A random sample has been drawn of children screened at several EPSDT clinics and referred for diagnosis and treatment. Enclosed is a list of children in the sample who were referred to you. A member of the project staff will need to review the medical records of these patients. The children's parents or legal guardians have been contacted, and we have their written consents for us to review their records. You will be provided with copies of the consent forms.

The data collection superviser will be contacting you to arrange for a member of the project staff to visit your office and abstract information from the records of these patients. The only assistance we will need from your staff will be for someone to pull the appropriate records, and possibly answer an occasional question about handwriting or abbreviations. It is not necessary for the staff to meet with you. Experience has shown that abstracting takes about 20 to 30 minutes per record. We will, of course, make every effort to arrange times at your convenience, and to make sure that our presence results in minimum disruption to your office procedures.

You have my personal assurance that the data collected will at no time be identified with individual physicians. All results will be reported in aggregate form. I hope the enclosed information will answer any questions you may have about the project and our needs. If you have any questions or comments, please feel free to contact me at the above address. I would like to express in advance my appreciation for your cooperation and assistance.

Sincerely,

Appendix II

DIAGNOSTIC TERMINOLOGY

TRACER	SYNONYMS	ASSOCIATED CONDITIONS*
OTITIS MEDIA	ear infection middle ear infection	upper respiratory infection (including rhinitis) tonsillopharyngitis pharyngitis mastoiditis cervical adenitis cervical adenopathy hearing loss
VULVOVAGINITIS	vaginal discharge purulent discharge any discharge, unless qualified by other source vaginal inflammation trichomoniasis vaginal infection moniliasis	cervicitis cervical discharge cervical infection uterine infection oophoritis gonorrhea pelvic inflammatory disease fallopian tube infection
TONSILLITIS	sore throat tonsillo-pharyngitis inflamed tonsils infected tonsils throat infection tonsillar infection congested tonsils hyperemic pharynx	enlarged tonsils hypertrophic tonsils and adenoids chronic mouth breather tonsillar hypertrophy otitis media upper respiratory infection bronchitis rhinitis cervical adenopathy or adenitis peritonsillar abcess pharyngeal abcess any abnormality of adenoids
STRABISMUS	motor coordination problem slight imbalance under convergence problem poor muscle movement	amblyopia

Diagnostic Terminology

TRACER	SYNONYMS	ASSOCIATED CONDITIONS*
IRON DEFICIENCY ANEMIA	↓ Hgb ↓ Hct mild iron deficiency anemia low serum Fe hypochromic anemia nutritional anemia	under-nutrition
LEAD POISONING	plumbism chronic lead ingestion increased blood lead level elevated blood lead level lead encephalopathy	mental retardation pica seizures
ECZEMA	allergic dermatitis allergic skin rash nummular eczema atopic dermatitis skin allergy	allergy (asthma, hayfever, hives) seborrheic dermatitis
PHIMOSIS	tight foreskin unable to retract foreskin non-retractable foreskin paraphimosis	balanitis small preputial opening posthitis

*Associated condition - a condition which has a significant probability of occurring simultaneous with, or as a result of the tracer condition.

Appendix III

SELECTION OF TRACER CONDITION CANDIDATES

Conditions known to be associated with persons in the EPSDT population which were mentioned but not ever seriously considered as appropriate tracers were:

- Tuberculosis
- Venereal Disease
- Malignant Neoplasms
- Leukemia
- Diabetes Mellitus
- Mental Retardation
- Epilepsy
- Rheumatic Fever (Rheumatic Heart Disease)
- Congenital Anomalies (e.g. Cleft Lip and Palate)

Conditions which were seriously considered as candidate tracer conditions but were eliminated by application of the decision-making criteria:

- Proteinuria (albuminuria) - not a discrete pathological entity
- Hypertension - not sufficiently prevalent not screened for
- Unspecified Hearing Loss - not a discrete pathological entity (combined with otitis media)
- Vision disorders - not a discrete pathological entity
- Sickle Cell Anemia - controversy over what constitutes appropriate medical management
- Bronchitis - not sufficiently prevalent
- Acute pharyngitis - not sufficiently prevalent
- Nutritional deficiency (obesity, malnutrition, avitaminosis) - no specific etiology and not a discrete pathological entity; controversy over what constitutes appropriate medical management
- Impetigo - not sufficiently prevalent
- Seborrhea - not sufficiently prevalent
- Development lag - controversy over what constitutes appropriate management

Heart murmur - not a discrete pathological entity; no specific etiology; not possible to determine appropriate medical management; epidemiologic information unavailable

Hyperkinetic reaction - not sufficiently prevalent; controversy over what constitutes appropriate medical management

Child Abuse - no specific etiology; not screened for; controversy over what constitutes medical management; not a discrete pathological entity

Dental caries - not systematically screened for; not appropriate in physician-oriented evaluation of medical care

Eye infections - not sufficiently prevalent

Urinary Tract Infection (bacteriuria) - not screened for; not sufficiently prevalent

Enuresis - not sufficiently prevalent; no consensus on the course of treatment; no clearcut expected impact of treatment

Asthma - not systematically screened for, thus not being referred in sufficient numbers. Asthma is an example of a tracer which would be expected to be prevalent in the pediatric EPSDT population but, due to screening procedures, is rarely referred

Umbilical hernia - not common in the general pediatric population; represents few elements on the process chart; management, such as surgery or counseling, is controversial

Sickle cell trait - management is controversial with respect to labelling and treatment; impact of treatment is not directly measurable; represents few items on the process chart

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